AMERICAN NURSERYMAN

The Nurseryman's Forte: To Make America More Beautiful and Fruitful

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Grasses and Legumes as Cover Crops
Trade Role in Control of Cherry Yellows
Landscape Planning and Planting
Plants for the Dry Wall

AMERICAN NURSERYMAN

F. R. KILNER, Editor

Editorial

PLANNING AHEAD.

Most nurserymen for some months have anticipated restrictions on home building, and the prohibition this week by the War Production Board of all "nonessential" construction comes as no sudden surprise.

This spring it will not affect our business. The homes under construction and those completed in recent months will be planted. Probably there will still be much residential planting work to be done by nurserymen in autumn as well.

To plan for 1943 is difficult under war conditions, but it must be done by nurserymen who will propagate or plant stock for the seasons ahead. What market will there be?

Besides whatever incentive the war garden program may provide, there should be a positive stimulus to home gardening by the enforced leisure of those persons not intensely and directly engaged in war activities and munitions production.

Automobile touring is already curtailed. Railroad travel no doubt will be, through lack of train space if not otherwise. Sports will suffer handicaps. Taxes and purchases of war bonds will limit the average man's expenditures on golf, etc.

So it seems likely that the comparatively inexpensive—yet healthy and relaxing—recreation of gardening will become more popular, rather than less.

Demand for stock in 1943, one might consequently predict, will be for small sizes of shrubs and trees that the home gardener may plant himself. Perennial plants, annuals in pots and flats, seeds, early-started vegetable plants will be in most request. Owners of several acres or more may set out young evergreens. Large specimen sizes will have less call.

Local landscape firms may have their difficulties, as already, in securing help to do many or large jobs of planting. The lack of such orders may be of less consequence on that account. The available personnel may, however, engage, for the duration, in an advisory service, making plans and supervising plantings to be done by the homeowners themselves. This service would apply not only to recently built residences, but also to the revamping or renovating of plantings about old homes—lately a source of considerable business to some landscape firms.

For sales in 1943, plans should take into account the possibilities above suggested. In 1942 it will be more than ever wise to follow advice offered previously—to move now all the salable stock you can—especially in larger, specimen sizes. Urge the public to plant it while it is available. Advertise it; sell it! This spring offers the opportunity to turn such stock into cash — which will be needed for operating expenses later.

The Mirror of the Trade

KEEP PAY ROLL RECORDS.

When the social security and unemployment compensation laws were enacted, several years ago, emphasis was placed on the fact that nurserymen should keep accurate pay roll records to show the type of employment in which each employee was engaged from day to day, particularly if exemption was sought as agricultural labor. Some nurserymen have done so, but others became careless after a time or did not think it worth while to mark the daily time card of each employee as to the type of work done.

Now the social security inspectors are numerous enough, and that agency of the government is sufficiently organized, so that calls are being made upon the larger firms to see the books and determine the tax liability of the individual companies. Those who have continued to keep careful records discover now that the time was well repaid. Those nurserymen who failed to keep close record find it necessary to spend a great deal of time to convince the investigators as to their claims in regard to employees they consider exempt.

Such an inspector, it is found, does not take the employer's word, but instead wants daily pay roll forms showing by written record what each man has done from day to day, so that the inspector himself can be the judge as to whether the labor is taxable or not. Unless such forms are produced, the inspector considers the wages paid the employees involved as subject to the pay roll taxes. This may seem an unwarranted technicality to the nurseryman who has operated in good faith, but experience with income and other taxes has made it plain that the government requires proof whenever a taxpayer claims an exemption, a deduction or what have you.

So the advice is emphatically repeated here that nurserymen keep accurate and complete records as to time, wages and type of work with respect to each employee. It may seem unnecessary bookkeeping now, but the day may come when you will consider it as time well spent.

LEAD IN TREE PLANTING.

American farmers are the leaders in reforestation. Nearly forty per cent of all successful tree plantations in the nation have been established by farmers—an area of 1,726,936 acres—according to the latest report compiled by the United States Forest Service, from data submitted by the individual states.

Total forest area established by all agencies since the Forest Service began keeping over-all records in 1926 is given as 3,869,526 acres, federal bureaus being credited with the second largest total of successful planting — 1,034,735 acres — four-fifths of which is in national forests. State agencies have established 673,925 acres of successful new forests; counties, municipalities, schools, colleges and the like account for 172,803 acres, and industrial organizations report 261,106 acres.

Of the industrial planting in the past, which has resulted in the establishment of forests, pulp and paper companies have been responsible for 61,094 acres, lumber companies for 69,663 acres, mining companies 28,128 acres, railroads, 2,986 acres, and water and power companies, 53,533 acres.

Total planting by all agencies during the year 1940 amounted to 519,051 acres. The Forest Service says that survival of trees in plantations represents about seventy-five per cent of those planted.

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Nursery stock is "good property" this spring—but what will it be later?

Wise advice is to move all the salable stock you can. Less acreage, less labor and less capital will be needed to plant lining-out stock than to carry along specimens. Also, the wartime buyers will want smaller sizes and lighter grades than the customers of yore.

Extra selling effort now is doubly valuable—to turn stock into cash and to save operating expenses later. The best way to move long items in a hurry is to price them in a conspicuous advertisement in the American Nurseryman.

Grasses and Legumes as Cover Crops

By R. E. Culbertson

Engaged in investigating several hundred varieties of grasses and legumes, the associate agrostologist of the Soil Conservation Service, region I, Upper Darby, Pa., describes some of special usefulness to nurserymen and recommends soil-conserving procedures for their land.

By way of introduction let it be known that an agrostologist is an agronomist who has "gone to grass." As an agrostologist, I am interested in assembling, testing and increasing grasses and legumes for soil and moisture conservation as well as for their utility value. At the present time we have approximately 500 species and varieties of grasses and legumes under observation at the Big Flats nursery of the Soil Conservation Service. It is our object to find superior plants for cover crops; gully, road bank, stream bank and sand dune stabilization; revegetation; hay and pasture, especially on upland soils; diversion ditches; landing fields, and other uses.

Nature has a merry-go-round for its water, but provides no way of getting back soil once washed away. Through evaporation and transpiration water vapor is formed and carried aloft. Most of this moisture moves out over the oceans before it is precipitated, and the rainfall over the land is, in turn, derived from moisture obtained by evaporation from oceanic areas.

Evaporation may dispose of practically all of the rain that falls during light showers, but during heavy downpours a large part of the rain percolates to ground water or runs off the surface of the land.

Transpiration is the loss of water vapor by plants. The amount of water used by plants varies. Conifers require about 200 pounds, deciduous trees about 500 pounds and grasses and legumes about 1,000 pounds of water to produce one pound of dry matter. A mature apple tree may use from fifteen to twenty tons annually.

This water which the plants use is taken in through the fine hairs of the root system. For best conditions it is imperative that all the water that can be removed by gravity drain away after heavy rains.

In general, soils free from vegetable matter can accommodate, at any one time, about five inches of water per foot depth. Part of this is drained by gravity, the amount retained ranging from about one inch in sandy soils to two and one-half inches in silty soils and up to three and one-half inches in clays. Some of this moisture is available to plants, and the more organic matter the soil contains, the more moisture it can hold.

The rate of infiltration, or the rate at which water enters the soil, varies with the texture and structure of soils and with the duration of the rain. At the beginning of rainfall the potential rate of infiltration may be several inches per hour, but decreases rapidly when the soil becomes wet.

Farmers in general have been woefully careless about their soil and water losses, and nurserymen have been also. No attempt has been made to run the rows on the contour; clean cultivation has been practiced throughout the season, with no cover crop during the winter, and large quantities of soil are sold with the plants each year.

In the past, nurserymen moved their plantings to a new piece of ground every few years, but suitable land is now becoming scarce and it is not profitable to desert a well established location. Therefore, something must be done to help the situation, and I am suggesting the following procedures:

A. Plant on the contour. As an illustration of the benefits of this practice may be cited results with vineyards at the Hammondsport soil conservation experiment station, New York. Grapes planted on the contour lost one-thirtieth of the soil and one-fifth of the water and had twice the yield of rows running up and down the slope. Rows that run on the level around the slope of the hill save soil, prevent washing, keep the rain where it falls and make work easier.

B. Reduce clean cultivation to a minimum, and practice rough, mulch tillage. I think of a soil in which a good sod has just been turned over as a stove full of coal (organic matter) with clean tillage representing the draft. You turn on the draft and burn out the organic matter. The chief purpose of cultivation is to eradicate weeds. Repeated cultivation to form a mulch to conserve moisture really has little value. Besides burning out the organic matter, clean cultivation results in losses of great quantities of soil.

Results at the Missouri experiment station during 1918 to 1930 showed that on a 3.66 per cent slope, cultivated plots lost 41.64 tons of topsoil per year in contrast with only 0.34 tons from a bluegrass sod. At this rate, seven inches, or all the topsoil, would be lost in twenty-four years.

The plant food per acre losses in the washed away soil of the 4-inch plowing expressed in fertilizers was reported to be 738 pounds of nitrate of soda, 543 pounds of superphosphate, 2,492 pounds of muriate of potash and 1,870 pounds of limestone.

While the loss of plant food in soil washed from slopes is serious, it may be even more so on level land through leaching. This loss chiefly affects nitrogen, the most expensive plant food element. Loss from leaching is most serious in the winter following cultivated crops or green manure crops, and the effective way to reduce these losses is by growing cover crops, so that the plant food may be absorbed before leaching occurs.

C. Where needed, install diversion ditches, terraces and sodded outlets to prevent washing. It is estimated that the rate of plant food removed by erosion is about twenty-one times greater than the rate of removal by agricultural crops. This loss occurs through the removal of rather uniform sheets of soil and by gullies. By diverting the water and breaking long slopes, the amount of topsoil removed is re-

duced to a minimum and runoff water is conserved.

D. Keep the land covered as much as possible. A cover of grasses and legumes anchors the soil, prevents water losses and increases the organic matter. Organic matter, besides being a direct source of nitrogen, gives off carbon dioxide that increases photosynthesis of the plants, makes the soil more friable and, combined with water, acts as a solvent for minerals. Soils lacking organic matter erode easily, crust or crack.

A great deal of experimental evidence indicates that actually to add organic matter to the soil it is necessary to lay the land down to sod for at least three to five years. Where growing a sod is impossible, allowing the cover crop to mature accomplishes the same purpose. The usual method of plowing under green cover crops does not permanently increase the amount of nitrogen or the organic matter.

Lyon and Wilson (2) in a cover crop experiment set up to simulate orchard conditions at Ithaca, N. Y., found that over a 10-year period the vetch plots lost forty-two pounds of nitrogen; rye, 217 pounds; peas, 380 pounds; oats, 382 pounds, and buckwheat, 412 pounds per acre, while the plots continually in grass gained 415 pounds of nitrogen per acre. They suggest laying the soil down to grass for a period of years and the culture of those legumes that are most active in fixing nitrogen.

Pohlman and Henderson (3), in studying the effects of rye, rye and vetch, crimson clover, and sweet clover following corn and soybeans, showed that rye, and rye and vetch, gave the highest yields on the following crops. On all plots, including the check, there was a loss of nitrogen in the thirteen years of the experiment, and they conclude that with the increased yields, the effect of cover crops was to furnish more available nitrogen for the succeeding crop rather than to build up the nitrogen supply of the soil.

You may wonder how much organic matter and nitrogen soils contain. Hester and Shelton (1) learned that the average trucking soil in Virginia contained approximately 35,000 pounds of organic matter per acre in the top six inches. The nitrogen content of the organic matter was about 4.3 per cent. On the basis of two million pounds of soil per acre, the average nitrogen content was 0.076 per cent; carbon, 1.03 per cent, and organic matter, 1.78 per cent (carbon x 1.724).

E. Where it is not feasible to grow cover crops or put the land down to grass, the use of vegetate mulch is suggested. Mulch offers complete erosion control, improves aeration, increases infiltration, has an evening effect on soil temperature, increases potash and organic matter, conserves moisture and, in general, results in a noticeable increase in plant growth.

Owing to the odd pieces of ground and types of material grown in nurseries, along with the necessity of having the ground presentable at various seasons of the year, the usual cover crops are frequently not applicable. Therefore, certain grasses and legumes that have shown possibilities are suggested.

Cover Crop Requirements.

The requirements of a cover vary according to the soil and the crop. There is no one best cover crop, but a consensus of nurserymen indicated that the following points should be taken into account when selecting cover crops for nurseries:

1. Ease and rapidity of establishment.
2. Growth habits.
3. Longevity.
4. Lignin content.
5. Competition for moisture and nitrogen.
6. Ability to compete with weeds.
7. Time of maturity.
8. Tonnage.
9. Grass or legume.
10. Erosion-control value.
11. Ability to grow under shade.
12. Snow and moisture retention.
13. Rich or poor land crop.
14. Lime requirement.
15. Fire hazard.

In considering possible grasses and legumes for use as cover crops in nurseries, it may be convenient to divide them into five groups: (1) Vernal dominant species; (2) summer annuals; (3) biennials; (4) perennials; (5) those primarily for mulching.

Vernal Dominant Species.

Southern spotted bur clover is the most likely of the bur clovers. It provides fall, winter and spring cover and matures in the latitude of Ithaca, N. Y., in early July. Its seed is in a bur and, if it is allowed to mature before it is plowed under, will come up the following fall without reseeding. In the bur the seed requires no inoculation. It is intolerant to strongly acid conditions.

Black medic is a low-growing annual or biennial legume, valuable where alfalfa and red clover do not succeed. It is best adapted to the heavy soils, and its growth is favored by a liberal lime content. It reseeds readily and makes a good winter cover. Its dense, prostrate habit of growth makes it particularly useful as a soil-holding plant. Black medic is perfectly winter hardy and is increasing in favor as a cover crop.

Field brome grass is a grass that rivals the rye grasses in rate of establishment and has the added advantage of doing well on light sandy or peaty soils. It has a large root system, reseeds well, competes with weeds and withstands low temperatures. In the vicinity of State College, Pa., field brome grass seeds about July 4, after which it breaks down strawy and makes a good mulch for the rest of the season. Under favorable moisture conditions, the seed germinates, but the new growth competes little for water until early fall. On the basis of the amount of dry matter per acre of roots, stubble and top, and ability to grow on poor land, this grass is one of the most promising of any under observation.

Summer Annuals.

California bur clover is a fast-growing legume that matures under Pennsylvania conditions in about eight weeks. It is less prostrate than the spotted bur clover and is without the spot on the leaf. It is not winter hardy under Pennsylvania conditions.

Hubam clover is an annual variety of the biennial species. It is fast-growing and may fit in where the matter of second year's growth is objectionable. It reseeds readily and could be disked in any time following seeding, if found desirable.

Common lespedeza has been an important forage plant in the south since the Civil war. It has been known since 1846. Korean lespedeza was introduced from Korea in 1919 and of the two is better adapted to our conditions. It grows well on

CHARACTERISTICS OF GRASSES AND LEGUMES FOR NURSERY COVER.

Species	Seeds per Lb. M	Seeding Rate Acre-Lbs.	Rate of Establishment	Optimum pH	Shade Tolerant	Height	Seed Availability	Fire Hazard	Fertility Level
Spotted bur clover (Medicago arabica)	181	15-20 Hulled	Rapid	6.2-7.0	Yes	Low	Ample	No	Int.
Black medic (Medicago lupulina)	319	15-20	Rapid	6.2-7.0	Int.	Low	Ample	No	Int. to Low
Field brome grass (Bromus arvensis)	162	20-25	Rapid	5.5-6.5	Int.	Int.	Not Commercially	Slight	Low
California bur clover (Medicago hispida)	204	15-20	Rapid	6.2-7.0	Yes	Low	Ample	No	Int.
Hubam clover (Melilotus alba annua)	235	12-15	Rapid	7.0-8.5	Yes	Tall	Ample	No	Low to Int.
Korean lespedeza (Lespedeza stipulacea)	240	20-25	Int.	5.0-7.0	Int.	Low	Ample	No	Low
Hop clover (Trifolium agrarium)	953	6-10	Int.	5.0-7.0	Yes	Int.	Not Commercially	No	Low
Western Wolths rye grass (Lolium multiflorum var. woldicum)	277	15-20	Very Rapid	6.0-7.0	Int.	Int.	Scarce	No	Int.
Sweet clovers (Melilotus alba—white) (Melilotus officinalis—yellow)	247	12-15	Int.	7.0-8.5	Yes	Tall	Ample	No	Low to Int.
Italian rye grass (Lolium multiflorum)	277	20-25	Very Rapid	6.0-7.0	Int.	Int.	Limited	No	Int. to High
Alsike clover (Trifolium hybridum)	704	4-6	Int.	6.0-7.5	Int.	Int.	Ample	No	Low to Int.
Perennial rye grass (Lolium perenne)	280	20-25	Rapid	6.0-7.0	Int.	Int.	Limited	No	Int. to High
Red fescue (Festuca rubra)	400	10-15	Slow	5.5-6.5	Very	Low	Obtainable Not Plentiful	No	Low
Sheep fescue (Festuca ovina)	700	15-20	Slow	5.5-7.0	Very	Low	Ample	No	Low
Orchard grass (Dactylis glomerata)	468	15-20	Slow	6.2-7.0	Very	Int.	Ample	No	Low to Int.
Crown vetch (Coronilla varia)	131	5-10 Stolons	Slow	6.0-7.0	Yes	Low	Scarce	No	Int.
Bird's-foot trefoil (Lotus corniculatus)	414	2-6	Slow	5.5-7.0	Yes	Low	Obtainable Not Plentiful	No	Low to Int.
Ladino clover (Trifolium repens)	754	2	Rapid	6.2-7.0	Yes	Low	Ample	No	High
Bluejoint (Calamagrostis canadensis)	3000	Stolons	Slow	5.5-6.5	Int.	Tall	Not Commercially	Slight	Int.
Reed canary grass (Phalaris arundinacea)	600	10-15	Int.	6.0-7.5	Int.	Tall	Ample	No	Int.
Weeping love grass (Eragrostis curvula)	1500	3-6	Rapid	5.5-7.0	Int.	Int.	Not Commercially	Yes	Low
Sericea lespedeza (Lespedeza cuneata)	350 Hulled	15-20	Slow	5.0-6.5	Int.	Int.	Ample	Slight	Low
Switch grass (Panicum virgatum)		15-20	Slow	5.5-7.0	Int.	Tall	Not Commercially	Slight	Low

poor dry sites and in our trial plots has reseeded as far north as Ithaca, N. Y.

Hop clover is a low-growing legume that does well on infertile, acid soils and is found growing wild in many nurseries. It requires little or no care and is especially valuable for seeding on idle land.

Western Wolths rye grass differs from Italian rye grass in its strictly annual growth. Its development is extremely rapid, and when it is sown in the spring on good land two heavy crops may be cut before it dies out. It may be sown in the fall under favorable conditions. Where quick cover is desired, and Italian rye grass stays on too long, this variety may well be used.

Biennials.

Sweet clovers, by reason of their large top and root growth, add much to the organic matter of the soil. If the clovers are allowed to seed the second year before disking down, a new crop will result and the cost of seeds will be saved.

Italian rye grass, although usually thought of as an annual, is, under favorable conditions, a biennial. It is rapid in establishment, is leafy and has a large root system. It is usually sown in the fall. If let go, it frequently matures two crops of seeds per season and, unless it is kept within bounds, may become a pest. It was formerly sown in the pathways and roadways at the grass nursery, but it was so hard to keep ahead of it that its use for that purpose was discontinued. The domestic rye grass that is on the market is about eighty per cent Italian and twenty per cent perennial rye grass.

Placing alsike clover under the biennials may be questioned, but one seldom secures more than two crops. It is acid-tolerant and will grow on wet soils. Alsike and oats make a good combination for a spring seeding to be plowed down in the fall.

Perennials.

Perennial rye grass, under favorable conditions, lives four or five years or more. It is rapid in establishment, has a large root system and sets only one crop of seed per year. When used in combination with other grasses, it is less likely to crowd them out than Italian or domestic rye grass. It is likewise more hardy. It must be stressed that the rye grasses require rich loams and clays along with cool and moist climatic conditions for their best growth. They are not adapted to poor and dry sites.

Creeping red fescue is a true perennial that lends itself to many uses around the nursery. It resists drought, cold and shade and is good for sand binding, holding hillsides and use on roadways. It makes an excellent sod and tends to become dormant during periods of drought, thus offering little competition for moisture during critical periods. The inclusion of several pounds in the general grass mixture is usually sufficient to insure a good fescue sod in a few years.

Sheep fescue is a near relative of red fescue. It is drought-resistant and capable of growing on poor acid

soils. Sheep fescue is especially valuable for use in groves where little or no care can be given.

Orchard grass needs no introduction to most of you. It grows under varied conditions and is drought and shade-resistant. It draws heavily on the moisture supply and should be mowed frequently where competition for moisture is a problem. The plant is persistent and some of the newer low-growing late strains may have wider application in the nursery program.

Crown vetch is a hardy, trailing legume with a vigorous rhizomatous root system. In New Jersey it is being used successfully as a cover crop in orchards and spruce plantings, for road bank and shoulder stabilization and for land reclamation. It recovers well after disking; so its use should be limited to permanent sites. In general, it does not seed well and is slow in establishment from seeds. However, once established, it spreads fairly rapidly by rootstocks.

Bird's-foot trefoil is a legume coming into favor on account of its ability to make effective ground cover on the poorer and acid soil types. In mixtures, it is slow in establishment, but when it is seeded alone, a good cover results the first season. Upright and prostrate forms have been developed. Prostrate plants frequently attain a diameter of six feet or more. It is a heavy seed producer and spreads rapidly once established.

Ladino clover is a tall and exceedingly rapid-growing variety of white clover, that makes an excellent cover. At the soil conservation service experiment station at Hammondsport, N. Y., it is proving to be an excellent cover crop in grapes, while at Massachusetts State College it is doing well in apples. Where not cut several times a season, it is surprisingly drought-resistant. Its use is increasing rapidly and it must be considered, especially in combination with orchard grass and other grasses, on the better soils having plenty of moisture.

Suitable for Mulching.

Bluejoint is a tall-growing, reed-like perennial adapted to low-lying wet land. It has fine seeds that stick together, making it difficult to handle. It is propagated chiefly by vegetative cuttings. It is native to the northeast, and its use is suggested where available.

Reed canary grass is a tall leafy perennial that does surprisingly well on high dry land as well as wet land. It has a heavy root system, and the forage may be cut two or three times a season. The leaves and stems become coarse and hard as the plant matures, thus making good mulching material. It is best adapted to pure stands and is a heavy yielder.

Weeping love grass is a rapid-growing perennial that will grow on poor and droughty soils. It is easy to establish, but must be sown during the late spring for best results. It is wiry and difficult to mow.

Sericea lespedeza is a perennial legume sufficiently coarse to make fair mulching material. Ordinarily, it will break down in one or two years. It is hardy at Ithaca, N. Y., and New Brunswick, N. J., but nevertheless should be considered only in the southern part of Ohio.

Switch grass is a tall, coarse, stemmy perennial with an extensive root system. It is late in maturing and continues to stand up through the winter, thus making it possible to mow and apply it when most convenient from a labor standpoint. In preliminary tests this grass has been outstanding in yield, adaptation to wet and dry sites and slowness of disintegration. It occurs over the whole northeastern states and is common on poor sandy soil.

Perhaps I should not close without referring to the wide use of soybeans alone and in combination with Sudan grass. The common practice has been to plow down the beans while still green and follow with rye. A new practice coming into use in parts of Pennsylvania and Maryland is to let the beans mature and stand over winter, and then secure a new seeding, from seeds held by the old plants, by disking sometime during May. To insure good bottom cover some growers are seeding from ten to fifteen pounds of rye grass with their soybeans.

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RAY HARTMAN, of Leonard Coates Nurseries, Inc., San Jose, Cal., recently announced that his large-scale tree and shrub-planting program at Camp Roberts has been accepted by the army. About 10,000 trees were set out and about 50,000 cubic yards of topsoil moved in.

This Cloister Garden Was One of Several Unusual Settings Staged at Dallas Flower Show.

Trade Role in Control of Cherry Yellows

By E. M. Hildebrand

The role of nurserymen in the control of cherry yellows and other virus diseases, proposed at the meeting of the New York State Nurserymen's Association by Dr. Hildebrand, of the department of pathology at Cornell University, is submitted here to a wider audience for possible larger cooperation.

Seven years ago, in 1935, the writer started transmission experiments to find out whether the so-called physiological leaf drop or yellow leaf disease of sour cherry could be transmitted by grafting. The investigation was started on the hunch that it might be a virus disease because no other microorganisms were present, and yellows or chlorosis is commonly a virus symptom. The hunch was further based on the fact that occasional leaves on some of the yellow trees showed necrotic ring spots in early spring, another virus-type symptom. Unfortunately during the second growing season, when early stage symptoms were beginning to appear, the experimental planting was destroyed by the university to make way for a road, and the experimental results were lost. We now know that the above two symptom pictures represent in all probability two distinct virus diseases of the sour cherry.

It was Prof. F. C. Stewart, at the New York experiment station, who first pointed out back in 1919 that this peculiar yellow leaf drop condition, which was then attracting attention for the first time, was not the same as that caused by the cherry leaf spot fungus. The prevailing notion up to a few years ago was that improper soil conditions or winter injury or a combination of both was the probable cause of this debilitating disease. Then about two years ago Keitt and Clayton announced that the yellow leaf or boarder tree disease of sour cherries in Wisconsin could be transmitted by budding, suggesting a virus as the causal agent. Their work was quickly repeated and confirmed in New York and Michigan, leaving no doubt that the true cause of yellow leaf drop was a virus.

Cherry yellows as it occurs in the orchards of New York state does not always present a clear-cut picture so as to be easily distinguished. Instead, it is often found affecting trees that are not doing well because of improper soil and winter injury. We now know that winter injury to the fruit buds of bearing trees is one of the results of the disease. Besides, at least two other virus diseases, including the ring spot already mentioned, enter into the cherry disease complex.

Our present knowledge of the cherry yellows disease and the toll it is taking in the commercial orchards of New York is far from complete. It seems to be primarily a disease of sour cherries, although it may occur naturally on certain wild prunus species, including the chokecherry. We know that it spreads slowly from tree to tree in the orchard, but have few data on this point. The Wisconsin workers estimate that the rate of spread is about five per cent per year. It is estimated that after orchard trees become infected it may take from five to ten years before they reach the permanently unprofitable advanced stage of disease. On the other hand, young trees produced from diseased buds in the nursery probably never are commercially profitable. Long-time records are needed before we can clear up this point. We know that trees in an advanced stage of disease may give fruit yields ranging from ten to about fifty per cent of the crop of healthy trees, but lack adequate data on yields of trees at different stages of disease. However, since the disease has the reputation of fluctuating from year to year in the amount of leaves dropped in early summer, it is to be expected that the toll taken in yields will likewise fluctuate on the same trees from year to year, depending on the severity of the leaf drop.

Affected cherry trees ordinarily show few yellow leaves after the initial heavy wave of leaf drop occurring in early summer. Therefore, by fruit harvest time or later on during the nursery propagating season, there is little to distinguish diseased from healthy cherry trees except fewer leaves and a reduced type of terminal growth more or less devoid of fruit spurs, with the bulk of the fruit borne on the terminal shoots produced the previous season. The fact that cherries borne on diseased trees are usually larger than normal, attractive and of excellent quality could easily mislead one into propagating the disease as a large-fruiting strain of the sour cherry. On the basis of selections made several years ago, Michigan workers seem to have evidence of the existence of productive strains of sour cherries resistant to this virus. They also have evidence of the existence of strains of the yellows virus. Although the approach to the solution of the cherry yellows problem through disease resistance may be slow to develop, it is an angle that should be exploited.

Where the cherry yellows virus originally came from and what part the nurseries may have played in the picture are matters of speculation, since no one knows the answers. In any event, now that the causal agent is known, we are in a better position to eliminate the disease when present in the nurseries and to keep it out in the future. Whether or not this statement will also apply to the other cherry viruses remains to be seen.

Surveys of nurseries have revealed two important facts: (1) The practical absence of the disease in nursery stock propagated from row to row year after year in the nurseries and (2) the presence of the disease in a few cases where budwood came from growers' orchards. Nursery trees propagated from diseased budwood are definitely stunted and smaller than normal trees. After planting in the orchard they continue to lag behind. If diseased buds are used, a large percentage of the resulting trees show yellow leaf symptoms during the first growing season in the nursery. These leaf symptoms seem to be even more conspicuous during the second growing season. The main

difference in symptom expression between nursery and orchard trees is in the time of appearance of the first yellow leaves. For example, about July 1, 1941, when the main wave of leaf drop was about over for orchard trees, practically none of the first-year nursery trees were showing symptoms. On the other hand, some cases were noted where the first-year cherry trees were just beginning to develop yellow leaves in September or even as late as October. While there was some delay in symptom expression on second-year trees, it was nowhere near as marked as in the first-year trees. At present we attempt to explain the delay in symptom expression by the fact that nursery trees continue to grow much later in the season than orchard trees. The main point of this discussion is that, since nursery trees show typical leaf symptoms of the yellows disease, it should be possible to locate and destroy such diseased trees when present in the nursery before they can reach the trade.

A nursery control program which will insure the production of disease-free trees was started last spring in New York state. Its twofold objective was to eradicate all diseased nursery trees in present plantings of cherries and to take the proper precautions in getting disease-free propagating materials for starting new plantings. In putting the program into effect the horticultural inspectors received the wholehearted cooperation of the nurserymen. However, some difficulties in making diagnoses were met with, as was to be expected. Since yellow leaves on sour cherry trees may have a variety of causes, such as drought, insects, fungi, mechanical injuries and sprays in addition to the virus, it took some time before the inspectors could readily distinguish the virus symptoms from the rest of the yellow leaf complex. A number of borderline cases in which it was difficult for one familiar with the yellows virus disease to diagnose what was wrong were encountered by the inspectors. These uncertain cases presented a challenge to the research program to develop a quick test for demonstrating the presence of the yellows virus.

Obviously we could not use the sour cherry as an indexing plant, since with this plant the incubation period of the virus was approximately a year. The first transmission tests from cherry to peach in an outdoor planting seemed equally unpromising. Then a new rapid transmission technique involving the use of seedling peaches growing in pots in the greenhouse, which had proved useful in the study of the X or yellow-red disease on peach, was tried with unexpected success. It involved placing diseased cherry buds about midway up the stems on small 18-inch seedling peaches and then cutting off the stems one node above the diseased bud from one to seven days later. The result from this treatment was surprising, since the first new leaves induced on the axillary shoots of the pruned trees showed yellow ring spots and mottling in about three weeks from the budding operation. Within four weeks another striking symptom was noted, that of a pronounced stunting and rosette of the new shoot growth, which was in marked contrast to the growth of healthy trees.

The technique was tested using numerous samples taken from cherry orchards and nurseries. Several samples were taken in nurseries from trees diagnosed as diseased, doubtfully diseased and healthy. Within a month diagnostic symptoms were showing in those cases where the budwood was harboring the virus. This quick indexing method as used in the greenhouse has already proved useful in our eradication program. It is also being tested in a disease garden at Ithaca, N. Y., to check on its possibilities for use outdoors. We are now in the midst of these studies.

To keep such virus diseases as cherry yellows out of the nurseries would seem to require something on the order of an indexing garden. There is under discussion at the present time the desirability of starting such test gardens in close proximity to nursery centers for checking on the health condition of all propagating materials brought in from outside the nursery. This would be in the form of a cooperative arrangement among nurserymen, inspectors and the college. The test garden idea would provide for a standard list of indexing hosts on which to check all samples of suspicious incoming materials before use in nursery propagation. Since we are concerned today with cherry yellows, we should certainly want to test cherry material on peach as well as on cherry and possibly several other prunus species still to be chosen for their diagnostic value. Some such method or arrangement has to be set up sooner or later if our nurseries and, in the final analysis, our fruit industry is to be properly safeguarded in the future.

So far as the cherry yellows disease is concerned, there seems to be no more important goal at the present moment than to produce healthy trees for the nursery trade. The nurserymen then, in combination with the inspection service and the college, have a real responsibility and a real opportunity to serve the fruit industry through cooperative effort. With a year's start in the job of cleaning up the nurseries of the cherry yellows disease, the eradication job should be practically completed by the end of 1942. More time and effort could then be devoted to the development of some means for keeping the nurseries clean, not only of cherry yellows, but of other stone fruit viruses. The fact that certain stone fruit viruses can be masked in one plant and at the same time be the cause of a severe disease in another is one of the strongest points in favor of the above idea. The writer believes that forward-looking nurserymen will give this matter their careful consideration and voluntarily take the proper steps toward the solution of a problem that must be faced sooner or later.

CORK TREE PLANTING.

Eighteen hundred 1-year-old cork trees will be planted in twelve scattered locations in Los Angeles county to test out the feasibility of growing cork there. The trees are temporarily warehoused at a Pacoima nursery. Five plantings will be located in the San Fernando valley. The first stripping of cork will be possible when the trees reach a trunk diameter of twelve inches. California-grown cork has been indicated to be equal or superior to that imported from Portugal and Spain, and trees planted there during the first World war have furnished the present knowledge of cork as grown in that part of the country.

THE lilac show of W. B. Clarke & Co., San Jose, Cal., started this year with the blooming of early and mid-season varieties April 10 to 12. Mid-season and late varieties will be shown from April 24 to 26.

Landscape Planning and Planting

By Joseph P. Porter

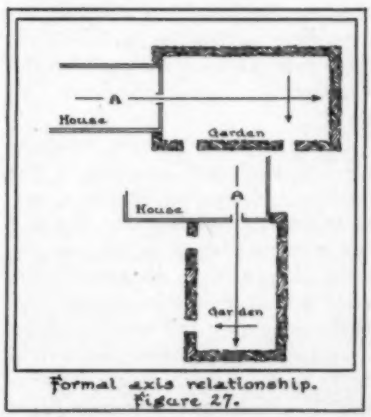
XIII. LANDSCAPE DESIGN.

Axis (Concluded).

Thirteenth in series of monthly articles on the application of landscape architecture to the property of Mr. Average Citizen, by the professor of landscape design in the department of horticulture at Cornell University, continues discussion of the treatment of the public unit area, or front yard, as to shrub planting for various purposes.

There are a few more points relative to the use of axis lines in design that merit our attention. We have seen that the position of the important axis line depends upon the architectural form of the residence, the convenience of a door that opens into the garden area, the location of a porch, or, as a last resort, the relationship of an important window. But only casually was it pointed out that the shape of a property and the intelligent use of space should influence the placement of the garden axis. This consideration is of great importance; it is often the determining factor in the location of the garden and lawn areas and, therefore, the criterion of axis location. There are occasions when the best location of lawn or garden does not allow a good relationship between the axis lines thereon and the residence.

It is not possible for us to enter into any detailed study of this complicated problem. I can point out, however, that a good designer can usually not only solve such situations, but frequently in so doing produce a most interesting and fascinating type of development. Connection between house and garden is usually made along a series of short related axis lines. These also function as routes of circulation which become paths. These are bordered with ground covers, flowers and high-quality shrubs, materials that invite inspection. Then the whole is so designed that one is led to follow the paths with the expectation of some greater interest beyond. Thus, a person will be directed to the point where lawn and garden can be placed most conveniently and from which the major view lines or axes can be developed to best advantage.



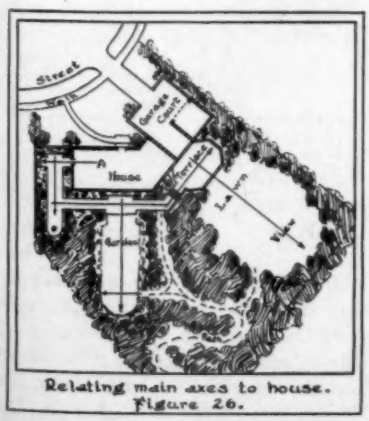
Formal axis relationship.
Figure 27.

This form of arrangement forces an informal effect for the layout, but the architectural lines and materials of walls, walks, steps and features are invariably quite pronounced. Plant materials of free-growth habit, that are informal and picturesque, go best with this type of design and their balance on the axis lines should always be occult (asymmetrical) rather than geometrical. One characteristic of this type of design is found in the gradual building up of interest from the point at which one leaves the house to the climactic effects which are invariably placed at some distance and which may in no way be directly related to the house interior or even to the house itself.

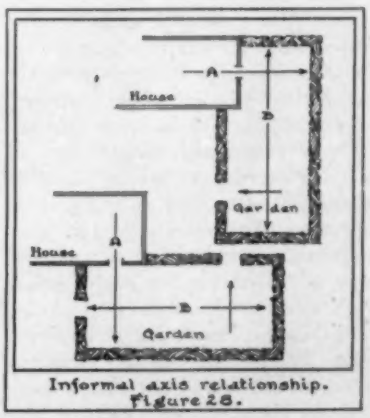
Such problems as this may occur on flat land when the property lines form a lot of unusual shape. It is most common on irregular topography, where knolls, steep slopes, cliffs, ravines and rock outcrops break up the terraine. Figure 26 illustrates such a situation. In this scheme we have the garden viewed from the dining room windows only and the terrace with its view to the lake placed against the rear wall of the service wing. The area occupied by house and garden was flat land. The lawn and terrace area slope abruptly toward the view. Note the connecting paths and axes that lead one from the living room door to the garden and terrace.

May I now direct your attention to Figure 27? Both arrangements shown here are simple and common. The direct connection of axis to house and the placement of the major garden upon this axis afford the strongest possible garden-to-house relationship. Most of the older and classical styles of landscape design follow this pattern.

Designs like these are apt to be quite formal in plan, although the plantings of woody materials, especially the trees, are frequently balanced in the occult fashion. At least this is true of more recent work. The climactic effect comes first in this arrangement and is comprehended both from within and immediately outside the residence. Lawns and



Relating main axes to house.
Figure 26.

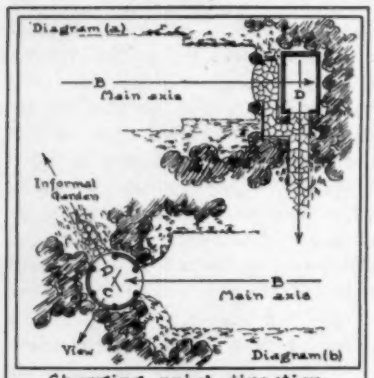


Informal axis relationship.
Figure 28.

Copyright, 1941, by Joseph P. Porter.

minor gardens will lie adjacent to or beyond this unit. The general effect and spirit of this form of design is quite the opposite from that described in the first part of this article.

Midway between the two extremes that we have considered comes a treatment of axis that is rather typical of the old English Tudor style and that is frequently used in the modern American. It is less formal than the last treatment described, but much more formal than the first. It is illustrated in figure 28. In this form of arrangement a short and



Changing axial direction.
Figure 29.

somewhat secondary axis is used to relate the house interior to the main garden axis. This axis (shown as A) must be strongly enough developed and terminated so that it leads an observer into the garden and builds up to the climactic B axis. Many times this can be so worked out that the effect of the B axis comes as a slight surprise, thus strengthening the design interest and the pleasure one derives in using the garden. Another advantage to this form of axis treatment is that it often helps the designer to utilize space areas to better account.

Axis lines may be divided, compounded or split and made to project in any direction if the point of junction or separation is properly handled. This is often necessary where additional units or gardens are to be developed adjacent to or beyond the first garden or where views to distant objects occur at the end of a garden. These points of axis junction lend themselves to a great variety of treatments, but in this article only a few solutions can be included and these are best indicated by drawings rather than words. I believe that it is possible to point out a number of considerations that, if followed, will insure successful treatment.

First of all, if an axis line is to be stopped and its direction altered or if it is to be divided into two axis lines, it is of great importance that the original line be actually terminated or concluded. This is best accomplished by having it end against some terminal feature. A piece of architecture is frequently used, and this is supported whenever possible with a background of good plant materials. Courtlike areas with architectural ornaments, terraces, overlooks, summerhouses, pergolas and pools are favorite developments at this point. Second, it is best if an observer is unable to detect or see the new axis line or lines until he arrives at this terminal point. Here he should have to turn at a definite angle and proceed in a new direction to get to or see the view or new garden through which the next line passes. To achieve this, substantial barrier plantings will have to be placed about the end of the garden and the terminal feature. Third, the new axis line needs an adequate introduction or starting point. With these thoughts in mind examine the arrangements shown in figures 29 to 33.

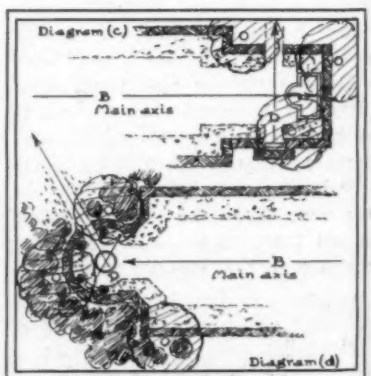
Figure 29 shows two solutions where a single axis line is to be terminated and then extended in a new direction. In both diagrams (a) and (b) a summerhouse is used as the terminal feature. In diagram (a) the main garden axis B is stopped, and D the secondary axis connecting the next garden unit continues at a right angle to the original line. In solution (b) two secondary axes leave the summerhouse at forty-five degree angles with the B axis. Here axis C subtends a good view and no exit is provided. On axis D the structure is open and D connects with an informal garden. Note how shrub masses enclose and back up these terminals.

Two more solutions of the same type using different features are shown in figure 30. Pools constitute the main feature, but in each case they are supported by other design elements. Note how these terminals are enclosed and the B axis stopped.

Still another type of axis division is shown in figure 31. Here we find the solution for simplifying a compound or double axis or else doubling a single axis. In each case the new axis lines are parallel to the original line. Good relationship is accomplished by crossing the ends of both the original axis line B and the new axis line D with a short connecting axis E. Around these junction points and including the axis E a landscape development is created. This may take the form of simple paths as in diagram (e) or it may be a terraced area with a pool as in (f). Another good solution is achieved by the pergola-winged summerhouse as in (g) or by a simple pergola as in (h).

It is quite possible that you have noted that where new axis lines either parallel the original axis or join this line at right angles rectangular developments lend themselves best as design patterns (see figures 29-a, 30-c and figures 31 and 32). Where the new axes must join the major axis at odd angles, circular forms as shown in figure 29-b and figure 30-d prove most adaptable. Several geometrical figures may be substituted for the circle, among which the elipse and such forms as the pentagon, hexagon and octagon are desirable. Many times only a portion of one of these figures is used (as shown in figure 33) or a part of one may be combined with a rectangle to form the pattern.

It is evident that axis junction points lend themselves to develop-



Changing axial direction.
Figure 30.

ments ranging from relatively simple affairs to complicated designs of intense interest. Only the ingenuity and ability of the designer limit the quality and variation that may be achieved. However, one must always bear in mind the caution, do not overdo a good thing.

In conclusion, a few words need to be added relative to axis terminals. No axis line except those that center

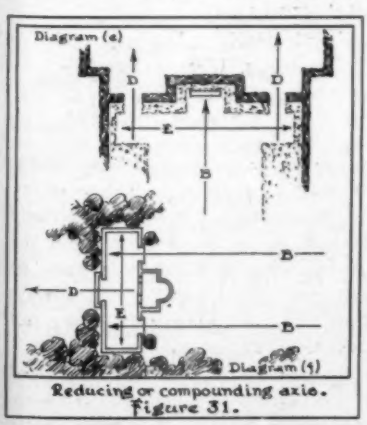
on offscape views must ever be left without a concluding point of emphasis. Axis lines need some special development both as a point of beginning and a point of ending. Like the capital letter at the beginning of a sentence and the punctuation mark at the end, so axis lines need similar special treatment—an introduction and a conclusion. The degree of development at one end and its measure of formality are determined largely by the character of the point where the axis line originates and the type of area through which it passes. Never should an important axis line be left to fade out over a lawn area. Either a feature or a specimen plant or some fine group of plants that form an outstanding composition should be used. The effect of the terminal may be formal or so informal that one might call it naturalistic. In either case, however, it should constitute an attraction, pictorial in effect. No axis is quite complete or satisfactory unless it produces a reaction as one looks along its length that would tempt an observer to photograph the scene with his camera.

ADVERTISING THAT FITS.

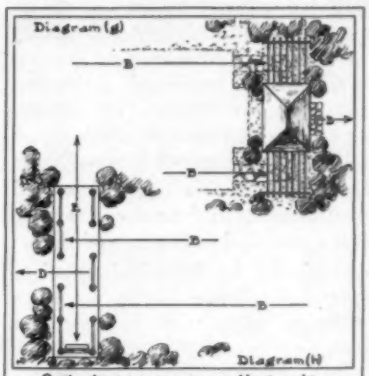
Speaking to the recent convention of the Illinois State Nurserymen's Association, W. Ray Hastings, from twenty-five years' experience in advertising of various forms, brought out clearly some basic considerations of policy in planning advertising. He said:

Your advertising must fit, must suit, the particular people you are trying to sell, and reach them when they are in the mood to buy.

When you use attractive advertising with mail-order copy, you need an attractive catalogue to carry out the sales. Where you use cheap copy, small cramped ads, bargain offers to lure suckers, your catalogue should have the same type of appeal. Also, when you sell good plants of top grades, properly packed, and get a fair price for them, your catalogue can and should afford good paper,



Reducing or compounding axis.
Figure 31.



Reducing or compounding axis.
Figure 32.

symmetrical layouts, readable type, careful make-ready on the press and ideal illustrations, whether they be black and white or in full color. I think that if color is used, it should be as perfect as possible. The public pocketbook bears this out. The shade might be slightly intensified, to make up for some fading inks or eyesight, but it should be the true color, prepared by an experienced horticultural artist from actual specimens. Rather than cheap color catalogue inserts, I'd much prefer an outstanding colored cover, which more than pays for itself. Then, where the business justifies, color inserts may be added.

Particular attention must be paid to items illustrated in color and otherwise prominently featured. First of all, we must be assured of sufficient stock to take care of demand. Unless a higher-priced novelty to a higher class of trade, the featured subjects should be popular, widely adapted favorites. That's why you see so many roses in color. Whether they sell at ten for $1, or $1 or more apiece, depends on your type of business. What I am trying to bring out is, sales costs being the same, advertisements of the cheap roses would likely carry arrows of red, purple or green, with cheap inks on newsprint or rotogravure. Such cheap catalogues must be purchased in quantity to reach more people to sell more plants, and with more competition, too. If it costs the same to sell one-fifth or one-tenth of the roses for the same volume of money, you still need less office force, less acreage, less warehousing and less capital or investment. But you use a better grade of advertising and catalogue, with true color work and really honest descriptions, and make satisfied customers.

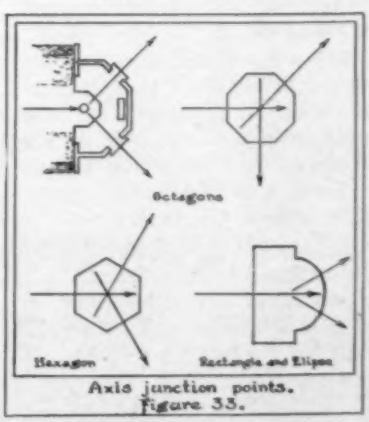
Your catalogue or other sales literature pictures to the prospective customer your personality, your business dealings and your plants.

NATIONAL PEACH COUNCIL.

Steps are being taken to organize a national peach council, along the lines of the National Apple Institute, National Dairy Council and American Meat Institute, among others that are working toward better conditions and price levels in their respective fields.

A corporation is being formed, and an office will be set up at or near Washington, D. C. The territory included in the council at the outset will be ten major peach-growing states.

Carroll R. Miller has been elected president, and the directors, two from each state, are: William M. Wright, Port Valley, and Wilmer M. Dickey, Musella, Ga.; Troy H. Cribb, Spartanburg, and L. V. Holmes, Johnston, S. C.; Howard R. Harrison, Eagle Springs, and C. D. Mathews, Hamlet, N. C.; S. N. Varnell, Cleveland, and Grover Eldridge, Sale Creek, Tenn.; Lionel Newcomer, Boyertown, and R. Johnston Gillan, St. Thomas, Pa.; Lester Collins, Moorestown, and Arthur J. Farley, New Brunswick, N. J.; Stanley Fulton, Hancock, and G. William Gardenhour, Smithsburg, Md.; Chesley Haden, Crozet, and E. D. Nininger, Roanoke, Va.; J. Howard Rannells, Romney, and Malcolm M. Brown, Martinsburg, W. Va.



Axis junction points.
Figure 33.

WHO'S WHO AMONG CONVENTION PLANNERS

Charlie Williams.

(Chairman of the local arrangements committee for the 1942 convention of the American Association of Nurserymen.)

Charlie Williams was born at Ruffin, N. C. After going through high school there, he took a business course at Richmond, Va. From the south he ventured west to Tulsa, Okla., where his brother Fred was operating the Durant Nursery with Atwood Harvey. Young Charles reached Tulsa on the day that Woodrow Wilson was first inaugurated and stayed there for six years. He pioneered in moving large trees, doing considerable work for the wealthy oil operator and one-time governor of Oklahoma, E. W. Marland.

When the United States got into the first World war, Charlie Williams joined the army, being in the 356th regiment of infantry, 89th division, Company A. He served overseas and was in the Army of Occupation six months in Germany.

Before going overseas he had visited Kansas City, where his nurseryman's curiosity and interest were aroused by the foresighted city planning he saw being done. After his army service and one more year in Tulsa, he moved to Kansas City, where he went into business immediately, his firm being known as Williams & Harvey. Here he continued the large tree moving in which he excelled.

About this time J. G. Eagleson and Fred Buehler, Lincoln, Neb., developed tree-moving equipment which was destined to make big tree moving easy. Charlie Williams was the first to market this motorized equipment, known as the Williams & Harvey automotive tree movers, which superseded tree wagons and horses. While demonstrating this line, he visited large nurseries in the east and became well acquainted with the trade.

Gradually he branched out into general landscape gardening as a necessary adjunct of his big tree work.

He now serves the exclusive Country Club and Missions Hills districts, with offices at Seventy-third and Mission road, P. O. Country Club Station, Kansas City, Mo.

Mrs. Williams calls herself "just a housewife," as her share of the partnership is taking care of Charlie and their 16-year-old daughter, Lorraine. Born Sarah Mae Bishop in Kentucky, she was reared in Ponca City, Okla., where she married Charlie twenty years ago in June.

Mrs. Williams is president of her local American Legion Auxiliary and, with her family, is active in the Country Club Christian church. Those who attend the A. A. N. convention in Kansas City will be impressed by her warm and vital charm, as she is to be a hostess to the visiting ladies at that event.

LOCAL COMMITTEE PLANS FOR A. A. N. CONVENTION.

With the local arrangements committee meeting frequently, plans for the 1942 convention of the American Association of Nurserymen, at Kansas City, are shaping up rapidly. The most recent meeting of the committee was called by Chairman Charlie Williams, April 7, with all members present. While it is almost impossible under present conditions to make any positive statements about what is in store for Kansas City visitors next July, the committee is willing that a few hints be offered.

More attention will be paid to entertainment for the women and children attending the convention. On the opening day, plans are being made to give the young folks an opportunity to get acquainted with each other. Some idea of what the committee has in mind can be gained from the fact that one member continually refers to this part of the program as the "young folks' brawl." There will be something going on every day for the youngsters.

Mrs. C. A. Chandler, who heads the committee of hostesses, has already had a meeting with the Kansas City women to discuss plans for the women's entertainment. With her on the committee are Mrs. Charles Williams, Kansas City, and Mrs. Chet Marshall, Arlington, Neb. Mrs. Marshall is president of the Women's Auxiliary. While the committee is not ready to divulge its plans, it gives assurance that the wishes and pleasure of the visiting women will be their first concern.

Easterners attending the convention looking for a "wild west" atmosphere will find plenty of it. "The Santa Fe Trail" is the name chosen for the large room that will be set aside especially for the nurserymen's rendezvous. The layout of this hangout will be such that no one will have any difficulty imagining he is in the "wild and woolly west." At any rate, that is what Kenneth Haysler, who is in charge of decorations, promises.

On the serious side, the program of the convention is being planned along novel lines. The executive committee is determined to make the meetings of vital interest to all nurserymen, regardless of the nature of their business. Panel discussions on carefully chosen subjects of wide interest are scheduled for each day. Efforts are being made to secure several outstanding speakers, but on account of the uncertainty of the times, no announcements can be made at present.

Ample provision has been made for trade exhibits. George Chandler, who is in charge of exhibits, reports that the entire mezzanine of the Muehlebach, headquarters hotel, has been reserved for this purpose. This is an ideal arrangement from the exhibitors' standpoint, because all of the meeting rooms, as well as the Santa Fe Trail, are on the mezzanine floor. Mr. Chandler says that several spaces have already been sold and numerous inquiries are coming in. Those who are interested in exhibiting should write

[Concluded on page 20.]

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Juniperus scopulorum (Silver Glow Juniper)
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Plants for the Dry Wall

By C. W. Wood

While the rock garden fad has waned, the many alpine plants it brought to gardeners' notice hold continued interest. Those adapted to dry wall planting are described in this series of articles, from trials by the author in northern Michigan and observations elsewhere.

Many of us who were and are interested in alpine and rock plants, not only as sales items but also for their beauty, worried not a little when the vogue for rock gardens commenced to wane. It was a foregone conclusion, however, that once gardeners had found the charm of these mountain plants they would not thereafter deny themselves the pleasure of their company just because some avaricious persons and unknowing gardeners had transgressed the rule of art and plant sense in their mad scramble. It is not surprising then to find the demand for rock plants is on the increase again, and it is not expecting too much, I believe, to look forward to an ever-enlarging call for them, especially if the better kinds are offered. One reason for the increase, I think, is the growing appreciation of the beauty of well planted dry walls. With these thoughts in mind, I shall attempt to set forth a few notes on plants of special merit for dry wall planting.. They will be taken up by families in alphabetical order, with the hope that it will make matters easier for readers.

Boraginaceae, which is perhaps most often represented in gardens by anchusa and forget-me-nots, offers us some good things for the dry wall. In fact, there is no better situation than a dry sunny ledge or crevice for the gray hairy onosmas, and there at a height which brings them near the level of one's eyes will their beauty of leaf and drooping bells be best appreciated. Take O. stellulatum tauricum, for instance. I know more than one nursery on heavy clay where the plant simply refuses to live when grown on a level surface, while it flourishes like the proverbial bay tree if given a high position in light soil on a sunny wall. Here in north Michigan it thrives under open field culture, no matter how severe the drought. It tells one what onosmas require and also tells how to make money out of their culture. Blooming specimens of the one mentioned or of the other readily available one, O. alboroseum, should be the means of selling many onosma plants in the neighborhood nursery. The first mentioned has clear yellow bells in a scorpoid raceme on stems up to a foot or more in height, commencing in June and often continuing throughout much of the summer, if drought does not discourage it. Albo-roseum is well named, its eardrops being white with a pink tip at first, changing to rose with age. They are easily grown from seeds when available; unfortunately that is all too seldom the case, so that one has to resort to cuttings. These, taken of nonflowering wood any time during the summer, root with ease in an outdoor frame. Although these two seem to be the only onosmas which are in many American lists, there are more than seventy species mentioned in literature. It is an encouraging fact for the progressive grower that all of the score or more species that I have grown have been good garden plants. Take courage, then, if you are looking for something out of the ordinary and take on any onosma that comes your way.

While boraginaceae only yielded one genus (more might have come to light if the search had been more thorough) to our inquiry, our next stopping place, campanulaceae, should be more generous. It will, first of all, give us one of the most generally useful of all ornamental plants, Campanula carpatica. Here this plant suffers in the dry wall if it is put in full sun, but give it shade, as on the north side of the wall, or the part shade of overhanging branches and it thrives as well as on the level ground. The Carpathian harebell needs no introduction to growers, its happy disposition and long period of flowering being known even to beginners. Observation in nurseries indicates, however, that its named varieties are seldom grown. If you do not grow its better named forms, it might pay you to investigate the following: Convexity, with medium blue flowers whose petals are reflexed; Har-

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Taxus Cuspidata, 2 to 2½ ft.	4.25	40.00
Taxus Cuspidata Capitata, 18 to 24 ins.	2.50	22.50
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mony, medium blue flat flowers; Loveliness, light mauve, nodding flowers; Purple Carpet, upturned saucers of blue-purple freely produced on 6-inch stems instead of the foot-tall stems of ordinary carpaticas; Queen of Somerville, large cup-shaped flowers of blue-violet on stems up to fifteen inches in height; Viscountess Byng, pale blue flowers, really immense for a carpatica. Although named forms cannot be produced with the ease of seedlings and are therefore out of the mass production class, they are easily propagated from fresh growths in early spring.

Nor should one overlook the possibilities of C. rotundifolia as a dry wall plant, especially for the partly shaded areas. I know a garden where years have been spent collecting and breeding improved forms of rotundifolia especially for dry wall planting and it is now one of the most pleasing sights that I know, blue bells of various shades and sizes on stems of varying heights throughout most of the summer. An ordinary packet of rotundifolia seeds usually turns out some interesting variations. It is a much-neglected plant in most sections.

If the climate is not too dry, the graceful jasiones, campanulas with flowers in heads, make lovely wall ornaments. Here, J. montana has done well in an acid soil in full sun, flowering abundantly in June and more sparingly from then until frost. It is attractive, with heads of pale blue flowers on 8-inch to 10-inch stems. If planted in the wall, it seems best in a leafy soil, and even then may need watering during droughts. Although it confines its flowering to a month or less, in June, J. perennis seems to be able to stand more abuse from the weather. Its height of six to eight inches also fits it better for a perpendicular wall. There are several jasiones mentioned in literature, all with flowers in shades of blue, and all that I have grown are desirable garden plants.

Phyteuma offers a number of good wall plants, and as seeds of several species are now offered in this country, one can experiment as he pleases. They are of the campanulaceae family, generally in shades of blue from pale tones to violet, with white varieties of several species. Generally, their flowers are in heads, though a few species, like P. lobelioides, which is beginning to reach American nurseries, are in long spikes. Most are easily grown (the only exceptions known to me are P. hemisphaericum and P. pauciflorum, which are quite impossible in this climate under ordinary culture) in a well drained limy soil in sun. One of my special delights is P. orbiculare (now available in seeds), which makes a mound of small roundish leaves, from which spring 8-inch slender stems bearing blue flowers in June.

A survey of the composites will reveal a wealth of material for the dry wall—far more, in fact, than we can account for here. I should like, though, to point out a few outstand-

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Rosa setigera	6 to 12 ins.	12.00
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Spiraea wallufi	6 to 12 ins.	32.00
Syringa henryi Lutece	6 to 12 ins.	16.00
Syringa josikaea	8 to 12 ins.	20.00
Syringa villosa	8 to 12 ins.	16.00
Syringa vulgaris	18 to 24 ins.	20.00
Viburnum lantana	4 to 8 ins.	28.00
Viburnum molle	8 to 12 ins.	25.00
Bignonia radicans	6 to 10 ins.	12.00
Celastrus orbiculatus	2-yr.	20.00
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ing ones. The first that come to mind are the silvery-leaved artemisias, not the ubiquitous A. Silver King, which always makes a nuisance of itself, or other tall kinds, but those little silvered kinds, either dwarf in stature or with arching branches which hang so gracefully from a perpendicular crevice. The most readily available kind which comes to mind is our A. frigida, from altitudes up to 10,000 feet in the Rockies. Here we have silvered arching sprays to excite the most jaded gardener and an especially exciting plant in the wall where it can get the perfect drainage which is its need. Incidentally, I have seen this plant used with splendid effects in the sandy soil of Lake Michigan gardens as a clipped edging. The west is full of other artemisias, tall and short (Rydberg mentions forty in Colorado alone), many of which possess special garden value. Not many Old World species, except the tall border kinds, are available here. I notice, however, that A. glacialis, which makes mats of feathery silvery foliage, is offered by one or two dealers. It is a little too difficult, according to my experience, for the dry wall in this climate, but where it can be provided with moisture, yet gets perfect drainage, it is a beautiful thing. The same is true of A. lanata (A. pedemontana seems to be quite the same). These artemisias may be grown from seeds, but they come so readily from cuttings of new growths that seedage is seldom needed after stock becomes available.

I hesitate to say much about the achilleas, because, first, they are badly confused in nurseries, necessitating much description to make oneself understood and, second, they are not, for reason of the uncontrollable spreading habits of some kinds, generally liked by gardeners. There is, however, some really good wall material in the genus—plants which spread pleasing carpets, sometimes green as in A. nana and at others silvered as in A. umbellata, usually finely cut and nearly always aromatic. If you look around with these matters in mind when you visit other nurseries, you will be able to pick up several good low-growing achilleas for wall planting. In addition to the two mentioned before, you will find good wall material in A. ageratifolia, whose silvered cushions are studded over with white flowers on 4-inch stems in spring, and in A. argentea, with its silvery ferny foliage and white flowers on 4-inch stems later in the season. These are all available in plants in this country, and I notice one dealer offers at least ten others in seeds this spring. No one need complain then that a good selection of achilleas is not available.

An experience of a friend with the common cat's-ear, Antennaria dioica, will perhaps show more vividly than I could tell how a change in method of displaying a plant may sometimes mean the difference between few, if any, sales in that item and a lively trade. He had a stock of cat's-ears in a bed, where it remained practically unnoticed for two years or more. One day in a moment of desperation he transferred some of the plants to a southward-facing wall, where they throve beautifully, filling several crevices with their pretty gray leaves and heads of white flowers (there is also a pink-flowered form). Customers began to notice the plant then, and sales picked up. I have lately seen another cat's-ear, A. subviscosa, which has even more value as a wall ornament, this time, because of its love of shade, for the north side of the wall. Its mat of silvery white, scarcely over an inch tall, makes a lovely picture in shady spots. Cat's-ears, of which there are many, may be grown from seeds, cuttings or divisions.

Chrysopsis has much to recommend it to gardeners despite the fact that one has to go far before finding a single species. When one is found, it will likely be C. mariana, a worthy plant because of its pretty golden asters in late summer, but whose height of two feet makes it rather too tall for the wall. There are a number of other species, however, most of them smaller than mariana, one, C. falcata, which I have found to be an excellent wall ornament. It may grow no more than four or five inches tall, and again it may be

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MUSSER FORESTS, INC.—INDIANA, PA.

twice that; always its stems are slender and graceful, bearing small yellow asters during the summer months. It is not spectacular, to be sure, but shows up well in the sunny wall, withstanding drought and neglect, as do most of its kind. As seeds of it are listed in this country, it would be an easy matter for interested growers to give it a trial.

Oregon sunshine or simply the sunshine plant, Eriophyllum caespitosum, which received some publicity in seed and plant lists a few years ago and now seems to have been dropped from all except a few catalogues, deserves far better from gardeners. It may be that gardeners did not have a fair chance to appraise the plant, because its silvered foliage usually looks bedraggled on a level surface, especially if the soil contains much clay. Put it in a dry wall, however, in light soil and in full sun, and its lovely foliage and inch-wide golden suns, on stems a foot or so in height, will brighten its home while it delights its owner. It is an indestructible plant, easily grown from seed. An experiment here with the plant might hold a clue to its poor performance in some gardens. About half the plants from a sowing were put in the rich soil of a coldframe, where they grew up to eighteen inches in height and were rather gawky lank specimens; the other plants were put in a lean soil on a south slope of the rock garden and there they grew not over a foot tall, most of them less. The silver of the foliage was intensified by the starvation diet and the compactness of growth further added to its charms. This experiment contains, I believe, a hint for its culture.

[To be continued.]

A NURSERY and greenhouse have been opened at Dodge and Seventy-second streets, Omaha, Neb., by the Henry Field Seed & Nursery Co., Shenandoah, Ia. Mrs. Clare Larmon is manager.

C. C. DOTY, the proprietor of Kool-Kamp, Silver Creek, N. Y., which has been established for sixteen years, is expanding his plant sales and is erecting concrete display beds in the 436 feet of frontage to the four acres of gardens. Harold L. Debenham, formerly at Salt Lake City, Utah, has joined this organization.

Get Extra Value
IN SPECIAL-PURPOSE
AGRICO

USE A LAWN FERTILIZER ON YOUR LAWN

For thicker, greener lawns, use Agrico for Lawns, Trees & Shrubs, specially formulated with plenty of nitrogen, balanced with all the other needed plant foods for quick start and season-long growth. Goes further—only 3 lbs. per 100 sq. ft. Easy to use.

USE A GARDEN FERTILIZER ON YOUR GARDEN

Grow gorgeous flowers, vegetables rich in minerals and vitamins. Use Agrico for Gardens—specially formulated with plenty of phosphorus needed for stiffer stalks, better bloom. Use Agrico and see the difference it makes.

AGRICO THE NATION'S LEADING FERTILIZER

PLAN A. A. N. CONVENTION.

[Concluded from page 14.]

to George Chandler, Chandler Landscape & Floral Co., Kansas City, Mo., or to Richard P. White, executive secretary, 636 Southern building, Washington, D. C.

CONVENTION SPECIAL.

The official special train to the A. A. N. convention, arranged by the transportation chairman, W. J. Smart, will leave Chicago July 19 at 6:30 p. m. and arrive at Kansas City at 7:30 next morning.

The Santa Fe Super-Chief, with its streamlined air-conditioned cars, has been chartered as the convention special. Upon departure from Chicago, those on the train will be served a Fred Harvey famous steak dinner at a get-together banquet. Later the club car will be available for renewing acquaintances and enjoying refreshments.

The Super-Chief equipment consists of drawing rooms, compartments, bedrooms, roomettes, section sleepers, club car and observation car. According to the type of space reserved, the cost of the trip runs from $28.25 to $35.29. This includes a round-trip railroad ticket, one-way Pullman accommodation as desired, the steak dinner and a taxicab to the Muehlebach hotel in Kansas City.

An illustrated folder describing the trip will shortly be sent to members, and reservations should be made early with W. J. Smart, transportation chairman, D. Hill Nursery Co., Dundee, Ill.

SOUTHWESTERN NEWS.

Two appointments have been made by the Kansas City park board. George M. Siemens, Jr., a residential builder, is now assistant superintendent of parks, at a salary range of $3,360 to $3,780. Benjamin R. Lantz, landscape architect with the firm of Hare & Hare, was appointed as engineering draftsman and construction supervisor for the department. His wage will be $2,280 to start. Mr. Siemens succeeds Thomas H. Stryker, who was discharged on charges of political activities, and Mr. Lantz succeeds Wiles Gillespie, who resigned some time ago to accept a position in national defense work.

H. C. Danbury, of the Garden Shop, Kansas City, Mo., was released from the hospital recently. He had

LINING-OUT STOCK

CONIFEROUS EVERGREENS

		Per 100	Per 1000
25,000	Biota Aurea Nana, R. C.	$ 8.00	$ 60.00
5,000	Biota Aurea Nana, 2¼-in. pots	10.00	80.00
3,000	Biota Aurea Nana, 9 to 12 ins., tr.	18.00	150.00
10,000	Biota Aurea Nana Globosa, R. C.	8.00	60.00
4,000	Biota Aurea Nana Globosa, 2¼-in. pots	10.00	80.00
4,000	Biota Aurea Nana Globosa, 9 to 12 ins., tr.	18.00	150.00
20,000	Biota Bakeri, R. C.	8.00	60.00
5,000	Biota Bakeri, 2¼-in. pots	10.00	80.00
5,000	Biota Bakeri, 9 to 12 ins., tr.	15.00	120.00
6,000	Biota Bonita, R. C.	8.00	60.00
3,000	Biota Bonita, 2¼-in. pots	10.00	80.00
5,000	Biota Excelsa, R. C.	8.00	60.00
5,000	Biota Excelsa, 9 to 12 ins., tr.	18.00	150.00
3,000	Biota Ramseyi, 2¼-in. pots	10.00	80.00
4,000	Biota Rosedale, 6 to 9 ins., tr.	12.00	100.00
1,000	Biota Texana Glauca, 12 to 15 ins., tr.	12.00	100.00
8,000	Cupressus Fastigiata Worthiana, R. C.	8.00	60.00
6,000	Cupressus Fastigiata Worthiana, 2¼-in. pots	10.00	80.00
2,000	Juniperus Chinensis Pfitzeriana, 2¼-in. pots	10.00	80.00
5,000	Juniperus Chinensis Pfitzeriana, 9 to 12 ins., tr.	18.00	150.00
3,000	Juniperus Japonica, 2¼-in. pots	10.00	80.00
1,000	Juniperus Sabina, 6 to 9 ins., tr.	12.00	100.00

BROAD-LEAVED EVERGREENS

4,000	Abelia Grandiflora, 2-in. pots	$ 6.00	$ 50.00
4,000	Abelia Grandiflora, 9 to 12 ins., tr.	10.00	80.00
4,000	Buxus Sempervirens, 9 to 12 ins., tr.	15.00	120.00
1,200	Elaeagnus Pungens Reflexa, 2¼-in. pots	10.00	80.00
2,500	Elaeagnus Pungens Simoni, 2¼-in. pots	10.00	80.00
3,000	Ficus Repens, 2-in. pots	10.00	80.00
2,000	Euonymus Japonicus, 9 to 12 ins., tr.	10.00	80.00
1,000	Euonymus Patens, 6 to 9 ins., tr.	10.00	80.00
2,000	Hypericum Moserianum, 2-in. pots	8.00	60.00
3,500	Jasmine Floridum, 9 to 12 ins., tr.	10.00	80.00
2,000	Leucophyllum Texanum, 2¼-in. pots	12.00	100.00
2,000	Nandina Domestica, 9 to 12 ins., tr.	15.00	120.00
2,000	Pyracantha Coccinea Lalandi, 2¼-in. pots	10.00	80.00
1,900	Pyracantha Atalantoides, 2¼-in. pots	10.00	80.00
1,000	Teucrium Chamaedrys, 2-in. pots	6.00	50.00
4,000	Teucrium Chamaedrys, 6 to 9 ins., tr.	8.00	60.00

Properly grown and packed.

BAKER BROS. NURSERY

Box 828

FORT WORTH **TEXAS**

NEW and UNUSUAL

PERENNIAL NOVELTIES

The Foresighted Plantsman Will Carry a Stock of These New Plants. They Will Make New Friends and Satisfied Customers!

	Per 10	Per 100
ARABIS CARMINEUS—Brilliant carmine-red flowers	$2.30	$18.00
ASTER VIOLETTA—Best double, deep violet-purple	2.50	20.00
CAMPANULA pers. MOERHEIMI IMPROVED—Beautiful large snow-white, semidouble	2.30	18.00
CAMPANULA SUMMER SKIES IMPROVED—The only perennial cup-and-saucer Canterbury Bell. Soft lavender and white..	2.50	20.00
DIANTHUS ROCK RAVEN RED—Fragrant, double rich crimson-red	$2.50	$20.00
DIANTHUS SILVERMINE—Very fragrant, pure white; compact grower..	2.00	15.00
MYOSOTIS PINK BEAUTY—The only real pink forget-me-not	2.00	15.00
PHLOX MARY LOUISE—The Number 1 white Phlox on the Hit Parade	2.00	15.00
SHASTA DAISY ADMIRAL BYRD—One of the finest semidouble. Lanceolated petals. A prolific bloomer	2.30	18.00

THESE PLANTS ARE IN DEMAND — ORDER EARLY.

CORLISS BROS. INC. NURSERIES **308 Reynard St. Gloucester, Mass.**

PLANT MORE EVERGREENS IN 1942

No landscape planting is complete without a generous use of the evergreens. Their fresh, eternal beauty is always cheering, and is even enhanced, when in winter, the bright, glistening needles shine through nature's white blanket of snow. They are symbolic of the perpetuity of the American nation.

"He who plants a tree, plants youth."

There is spiritual uplift in seeing plants and trees grow. As has been stated, "There is no particular virtue in ugliness, and our soldiers will not fight one whit less vigorously for our country, if they remember it as a place of lovely trees and lawns, and fragrant flowers." What a wealth of wonderful plants can be found among the tall, trailing and blossoming evergreens.

The very satisfactory conifers with their sweeping range of type, foliage and variable uses as specimens, mass plantings and hedges: **Abies, Pseudotsuga, Pinus, Picea, Cryptomeria, Taxus, Thuja, Tsuga, Thujopsis, Juniperus, Chamaecyparis** and others, from neat pygmies to towering giants.

And for slopes, rockeries and terraces the matchless evergreen ground covers: **Abelia, Cytisus, Genista, Hedera, Linnaea, Teucrium, Erica, Vinca, Pentstemon, Juniperus, Ajuga, Cotoneaster, Euonymus** and others.

Surely the most exacting taste can be fully satisfied with these delightful evergreen blossomers: **Gaultheria, Kalmia, Leucothoe, Gentiana, Genista, Nandina, Escallonia, Photinia, Erica, Phyllodoce, Daboecia, Pyracantha, Cytisus, Camellia, Rosmarinus, Cassiope, Calluna, Berberis, Spartium, Vaccinium, Azalea, Rhododendron, Arctostaphylos, Xerophyllum** and others.

What a marvelous list from which to select evergreens: Unusual types and odd forms, new and old standard varieties, lasting from year to year, growing to perfection with but little care.

Let's keep the home fires burning

When the boys return home, they should find the homeland more beautiful than ever. For those too old, or too young, or physically handicapped to engage in actual war activities, gardening meets an urgent need. As a sick room needs flowers, so a war-sick world needs flowers and trees and gardens. There has never been a more opportune time to plant. Is your supply of lining-out stock complete? And adequate to meet the forthcoming demands?

Sherwood Nursery Co.

EVERGREENS — Propagators and Growers

141 S. E. 65th Avenue ◂▸ Portland, Oregon

Send in your order now or write for Wholesale Trade List. In case of shortage of stock of particular varieties, orders will be filled in consecutive order. Shipping cost on lining-out stock paid to all points in the United States.

Wholesale only—mention the American Nurseryman.

been there on two occasions since the first of the year for treatment, but now reports that he is feeling fine and weighs more than he has for a long time.

The members of the Kansas City Nurserymen's Association met again at the Westaviary Tea Room on the evening of March 3, this time with their ladies present. Purpose—to plan for the coming convention in July. After a meal worthy of the approval of any gourmet anywhere (N.B.—Kansas City cuisine combines fine features of northern, eastern, southern and western cookery—come to the convention and see!), tentative plans were presented and discussed by all. Then the gentlemen retired for further committee reports, leaving the ladies to a lively discussion of just what would most please Mrs. Visiting Nurseryman. Mrs. George Chandler arranged a subsequent meeting at her home late in April to cast the plans in definite mold.

Mail-order nurseries in the middle west report an unusually good business. The demand for fruit trees and small fruits has been especially heavy, attributable, no doubt, to the victory garden campaign.

SURPLUS LINING-OUT STOCK

EVERGREEN NURSERY CO.

Established 1864 STURGEON BAY, WIS.

	Per 100	Per 1000
Abies balsamea (Balsam fir)		
2-yr., 2 to 4 ins., sdlgs.	$1.75	$15.00
3-yr., 4 to 6 ins., sdlgs.	2.00	17.50
Juniperus c. depressa (Prostrate juniper)		
2-yr., 2 to 4 ins., sdlgs.	$2.50	$20.00
2-yr., 2 to 4 ins., X.	5.00	45.00
Juniperus virginiana (Red cedar)		
1-yr., 2 to 4 ins., sdlgs.	$3.00	$25.00
2-yr., 4 to 6 ins., sdlgs.	4.00	35.00
Picea can. albertiana (Black Hills spruce)		
2-yr., 2 to 4 ins., sdlgs.	$2.50	$30.00
3-yr., 4 to 6 ins., sdlgs.	4.50	40.00
3-yr., 2 to 4 ins., X.	4.00	35.00
3-yr., 4 to 6 ins., X.	5.50	50.00
3-yr., 6 to 8 ins., X.	8.00	75.00
Picea excelsa (Norway spruce)		
2-yr., 4 to 6 ins., X.	$3.50	$30.00
3-yr., 6 to 8 ins., X.	4.50	40.00
3-yr., 8 to 10 ins., X.	5.50	50.00
3-yr., 10 to 12 ins., X.	6.50	60.00
Picea pungens (Colorado Blue spruce)		
2-yr., 2 to 4 ins., X.	$3.50	$30.00
3-yr., 4 to 6 ins., X.	5.00	45.00
3-yr., 6 to 8 ins., X.	6.50	60.00
3-yr., 8 to 10 ins., XX	12.00	....
3-yr., 10 to 12 ins., XX	15.00	....
Pinus mughus (Dwarf Mugho pine)		
2-yr., 2 to 4 ins., sdlgs.	$3.75	$40.00
3-yr., 4 to 6 ins., sdlgs.	5.50	50.00
3-yr., 6 to 8 ins., sdlgs.	8.00	75.00
3-yr., 2 to 4 ins., X.	6.50	60.00
3-yr., 4 to 6 ins., X.	10.50	100.00
These Mugho Pines are the true dwarf type, grown from imported seed. When the supply is gone, there will be no more.		
Pinus nigra (Austrian pine)		
6 to 8 ins., X.	$6.50	$60.00
8 to 10 ins., X.	7.50	70.00
10 to 12 ins., X.	9.50	90.00
8 to 10 ins., XX	12.00	110.00
10 to 12 ins., XX	14.00	....
12 to 15 ins., XX	16.00	....

	Per 100	Per 1000
Pinus sylvestris (Scotch pine)		
12 to 15 ins., X.	$8.00	$75.00
Pinus strobus (White pine)		
2-yr., 2 to 4 ins., sdlgs.	$1.25	$10.00
3-yr., 4 to 6 ins., sdlgs.	1.75	12.00
3-yr., 6 to 8 ins., sdlgs.	2.00	17.50
3-yr., 4 to 6 ins., X.	3.50	30.00
Thuja occidentalis (Am. arborvitae)		
3-yr., 6 to 8 ins., sdlgs.	$4.25	$40.00
3-yr., 4 to 6 ins., X.	4.50	40.00
3-yr., 6 to 10 ins., X.	6.50	60.00
Larix europaea (European larch)		
2-yr., 6 to 8 ins., sdlgs.	$2.50	$20.00
2-yr., 8 to 12 ins., sdlgs.	3.00	25.00
3-yr., 12 to 18 ins., sdlgs.	3.50	30.00
3-yr., 12 to 18 ins., X.	9.00	85.00
3-yr., 18 to 24 ins., X.	12.00	....
Amelanchier canadensis (Juneberry)		
2 to 4 ins., sdlgs.	$1.50	$10.00
Cornus amomum (Silky dogwood)		
6 to 9 ins., sdlgs.	$1.00	$ 8.00
9 to 12 ins., sdlgs.	1.25	10.00
12 to 18 ins., sdlgs.	1.50	12.50
Cornus paniculata (Gray dogwood)		
3 to 6 ins., sdlgs.	$1.50	$10.00
6 to 9 ins., sdlgs.	2.00	17.50
Cotoneaster acutifolia		
3 to 6 ins., sdlgs.	$2.00	$17.50
6 to 9 ins., sdlgs.	3.00	25.00
Shepherdia argentea (Buffaloberry)		
4 to 6 ins., sdlgs.	$1.50	$12.00
6 to 9 ins., sdlgs.	2.00	17.50
Shepherdia canadensis		
2 to 4 ins., sdlgs.	$1.50	$12.00
Acer saccharum (Hard sugar maple)		
4 to 6 ins., sdlgs.	$1.50	$10.00
6 to 10 ins., sdlgs.	2.00	15.00
12 to 18 ins., sdlgs.	2.50	20.00
Viburnum dentatum (Arrowwood)		
3 to 6 ins., sdlgs.	$1.50	$12.00
9 to 12 ins., sdlgs.	3.00	25.00
12 to 18 ins., sdlgs.	5.00	45.00

More Orders from Washington

TIRES FOR TRACTORS.

Farm tractors which were originally fitted with steel wheels but have been changed to rubber tires will not be granted certificates to purchase tires whenever steel wheels are locally available and can be put back into service, state rationing administrators were informed April 6 in a letter issued by the Office of Price Administration.

This is a further conservation step in view of the critical national rubber situation. The revised tire rationing regulations already provide that no tires are to be released for converting a farm tractor from steel wheels to rubber.

The letter made plain, however, that where the vehicle is already on rubber tires and no substitute wheels are available, certificates may be issued in the regular manner.

CONSTRUCTION CURTAILED.

The War Production Board April 8 drastically curtailed all new construction, placing all building under rigid controls designed to prohibit all except projects related to the war effort or to fufill an urgent civilian need. The official view of the sweeping edict is that it defers "nonessential" construction until after the war.

The control applies to publicly financed projects as well as private undertakings. It will reduce the number of landscape contracts for planting after present construction jobs are completed.

The order, effective immediately, is binding upon property owners, builders and suppliers. It prohibits the start of all except minor construction projects without specific authorization from the W. P. B. It also bans withdrawals from inventory, and the purchase, sale or delivery of any material for use in unauthorized construction.

The order provides specifically that no residential construction, except maintenance and repair work, may be started without W. P. B. permission unless its estimated cost is under $500.

No new agricultural construction may be started if the estimated cost

"KEEP'EM FLYING!"

is $1,000 or more for the particular building or project involved.

In computing such costs, the amount spent on the project within twelve months of the date of beginning construction, and subsequent to April 7, 1942, is to be included.

Specific types of construction are exempt from provisions of the order. These include:

1. Projects which will be the property of the army, navy, coast guard, maritime commission and certain other listed agencies of the federal government.

2. Projects to reconstruct residential property damaged or destroyed on or after January 1, 1942, by fire, flood, tornado, earthquake or the public enemy.

3. Projects of the type controlled by provisions of the orders of the M-68 series, which cover the production and distribution of petroleum.

USED BURLAP BAGS UNDER NEW CEILING.

Maximum prices for all types of secondhand cloth bags, as determined by levels prevailing during the October 1-October 15, 1941, period, were established March 25 by the Office of Price Administration in maximum price regulation No. 55, effective March 30, replacing revised priced schedule No. 55.

In establishing maximum prices, the O. P. A. has adopted for a basis the two factors of size of the container and the weight of the material of which the secondhand cloth bag is composed.

Bags have been divided into two major price classifications under the new schedule. The first, processed bags, includes containers which have been cleaned, mended and patched and are ready for immediate reuse as a container. The second, unprocessed bags, consists of those which have not been reconditioned so as to be ready for immediate reuse since last being used.

The specific maximum prices replace provisions of the old schedule, whereby each seller's maximum prices had been frozen at his individual highest prices on sales or deliveries during the October 1-15 period. Such prices, of course, varied considerably from seller to seller, depending on circumstances peculiar to each individual sale.

"Unmendable" bags have been definitely brought under price regulation for the first time by inclusion

Rhodos
BOTH NATIVE
AND NURSERY GROWN
KALMIA AZALEAS
Hemlocks AND Pieris
La Bars'
STROUDSBURG PA.

RUSH ORDERS RUSHED
If you do not already have our Wholesale Price List, please send immediately for one.
We have to offer a complete line including
Daphne Cneorum, Hydrangeas,
Flowering Crab, Viburnum,
Barberry, California Privet,
Fruit Trees, Patented Roses.
C. R. BURR & COMPANY, Inc.
Manchester, Conn.

LINING-OUT STOCK
Tsuga canadensis, Abies balsamea, Picea rubra, Pinus Strobus, Acer rubrum and saccharum; Betula lenta, lutea, papyrifera and populifolia; Fagus americana, Fraxinus americana, Prunus pennsylvanica and serotina and many other trees and shrubs.
L. E. Williams Nursery Co.
P. O. Box 147, Exeter, N. H.

within the unprocessed classification. These unmendable bags are those which are torn or damaged so that they cannot be reconditioned for use as a container, but which are of sound material and can be satisfactorily used for wrapping purposes or can be made into smaller-size containers. The regulation does not cover "junk" or "waste" bagging which has deteriorated so that the material is not further usable for wrapping or as a container.

Secondhand bags include those composed of burlap, jute, sisal, istle, cotton cloth, gunny cloth or other textile material which has been used once or more to package any product, or for any other commercial purpose.

Restrictions are placed, for the first time under the regulation, on the maximum amount which may be required as a deposit for lending or leasing bags. This deposit charge is limited to the maximum price for an unprocessed bag of the same size, type and weight. The provision was added because of a growing tendency for sellers of packaged commodities to induce purchasers to return the bag directly to the suppliers by loaning or leasing the containers and requiring a deposit thereon which, in many cases, was several times larger than the seller's permissible maximum price for sales of bags of the same type.

All sellers of secondhand bags come under terms of the regulation.

Typical of prices established by the regulation are the following on burlap bags:

Size	Weight of Material	Maximum Prices: Processed	Unprocessed
24x36.....	8 oz.	$.115	$.085
33x44.....	8 oz.	.190	.160
24x36.....	10 oz.	.148	.118
33x44.....	10 oz.	.248	.218

MINIMUM WEIGHT LIMITS.

To release boxcars and other railroad equipment for the movement of war materials, Joseph B. Eastman, director of defense transportation, March 24, established minimum weight limits, beginning May 1, on loadings of cars carrying less-than-carload civilian freight. At the same time, he directed rail carriers to submit to the office of defense transportation plans for individual or joint action to curb wasteful use of freight cars in the handling of merchandise.

In the order Mr. Eastman fixed a minimum weight limit of six tons,

WHY THERE ARE
3 HORMODIN POWDERS

Experienced florists who propagate everything from chrysanthemums to evergreens, realize that *no single-strength root-inducing powder can propagate efficiently over so broad a range.* That is why Hormodin Powder has been developed in *three* strengths to parallel the range of hormones in nature:

HORMODIN POWDER No. 1
The general purpose powder—designed to root carnations, roses, and many other house, garden, and greenhouse plants.

HORMODIN POWDER No. 2
For propagating many woody and semi-woody types.

HORMODIN POWDER No. 3
For propagating many evergreens and dormant leafless cuttings.

THE TREATMENT
The treatment is simple. Moistened stems are dipped into Hormodin Powder, then placed in the usual propagating medium.

THE COST
The cost is small. For example: the one pound tin of Hormodin Powder No. 1 (the General Purpose Powder) costs only $3.00. It is estimated that each ounce will treat about 2500 cuttings of average size.

Booklet on request

Be sure to ask your dealer for the
HORMODIN POWDERS
Best suited for your purpose

MERCK & CO. Inc. *Manufacturing Chemists* RAHWAY, N. J.
New York · Philadelphia · St. Louis · In Canada: Merck & Co. Ltd., Montreal and Toronto

EARLY HARVEST BLACKBERRIES
For Victory Gardens

Ripen early—before hot weather. Bear heavily second year—easy to grow. Rust-free plants. Root cutting plants.

	100	1000	5000
No. 1.....	$1.40	$12.00	$50.00
No. 2.....	1.10	9.00	40.00

THE WILLIS NURSERY CO.
Progressive Nurserymen Ottawa, Kans.

No. 6 Model Priced from $75

KEMP *Power* SOIL SHREDDERS

STOP LOSSES Save valuable Sod and Manure

Hand sifting screens out lumps of sod and manure that are worth money to you. But when you prepare compost with the KEMP Power Soil Shredder you not only save up to 75% of the labor time but you shred all sod and manure and use it without waste. It's all done in one quick operation and is set for any texture you desire.

You can buy the right size KEMP machine for your needs—from 2 to 20 cu. yds. per hour capacity. Prices from $75 up.

CUT AND SEND
KEMP MANUFACTURING CO.
Dept. AN-422, 1027 E. 20th St., Erie, Pa.
Please forward the complete story on the KEMP Power Soil Shredder.
Name .....
Firm Name .....
Address .....
City..... State.....

effective May 1, on loadings of cars containing less-than-carload freight, commonly known as merchandise freight. The order raises the minimum allowable weight to eight tons per car July 1 and to ten tons per car on and after September 1.

Loadings of merchandise freight in 1941 averaged five and three-tenths tons per car on intercity routes and two tons per car on movements within terminal districts.

Rail carriers are forbidden by the order to forward any car loaded at less than the prescribed weight, unless the car contains military materials, unless no other common carrier is available to transport the shipments to be contained in the car, or unless permission is granted by the office of defense transportation to forward the car. Certain additional exceptions to the blanket prohibition are set forth in the order.

If insufficient merchandise is available to bring the load of a car up to the required minimum within thirty-six hours after the merchandise is received, the traffic must be diverted to another carrier. In such cases, rail carriers are authorized to disregard the routing specified in the bills of lading of merchandise shipments. All types of carriers—rail, water, motor and forwarder—are required to accept and transport shipments diverted to them, to the extent of their available service capacity and subject to certain terms and conditions set forth in the order.

The order directs the carriers promptly to formulate plans for the handling of merchandise by any of six different methods:

(1) Through establishment by individual carriers of regular sailing days on merchandise car lines.

(2) Through establishment by competing carriers of alternate car sailing days.

(3) Through agreement between carriers to exchange their merchandise traffic movements.

(4) Through formation by two or more carriers of a pool of merchandise traffic or revenue.

(5) Through arrangements for joint loading or joint operation of merchandise service.

(6) Through appointment by any carrier or group of carriers of one or more agents to handle their merchandise traffic and, so far as necessary, to coordinate traffic movement.

Plans drafted by the carriers must be submitted for consideration. Under the procedure outlined, the office of defense transportation will then issue orders directing the carriers to carry out these plans, or such modifications of the plans as it believes necessary.

Although less-than-carload freight represents only about one and one-half per cent of total freight tonnage loaded by class I rail carriers, the number of cars loaded with such freight during the first nine weeks of 1942 amounted to over twenty-six per cent of all freight cars loaded and to over forty per cent of all closed freight cars loaded. On a car-day basis, which takes account of the fact that merchandise traffic usually involves shorter hauls than bulk freight, about fourteen per cent of all boxcars are in effect assigned to less-than-carload traffic. This traffic therefore requires the equivalent of more than 100,000 closed freight cars out of a total of about 850,000 such cars.

FIBERS TO REPLACE JUTE.

United States farmers are not alone in feeling the shortage of jute from India for making burlap bags. Brazil and Ecuador also need jute, particularly for coffee bags, of which Brazil uses about fifteen million a year. Both countries are now looking for native fibers to replace jute, the United States Department of Agriculture reports.

In this country cotton is urged for bagging, and bagging is also a good use for surplus cotton. But now while defense orders have first call on cotton bagging fabrics, there has been some interest in the possibility of getting South American substitutes for jute. The jute shortage is likely to continue, since India, seeing no probable relief of the shipping shortage, has cut its jute acreage in half.

Eventually the United States may buy several South American fibers as substitutes for jute, but not for some time to come, the office of foreign agricultural relations says. Brazil and Ecuador will need them at home.

Brazil has at least five promising fiber-yielding plants. These five are known as paco-paco, Juta indiana, Malva veludo, guaxima and papoula de Sao Francisco. Guaxima is said to exceed three feet in length and to produce a good yield per acre. It is used in mixture with jute, as is papoula de Sao Francisco. With additional acreage in cultivation one group of mills hopes to become independent of jute and to export finished bagging.

In Ecuador the wild fourcroya plant yields cabuya fiber, which natives use for making bags and bagging, ropes, belts and soles for sandals. At present there are only two cabuya plantations. Increased production would depend on demand. Uruguay has at least eight fiber plants, but landowners find it more profitable to specialize on meat and wool.

SEEK RESEARCH ON TURF.

Establishment in the United States Department of Agriculture of a program of "advisory service and research into the culture of turf grasses" has been recommended by a group of representatives from national organizations interested in roadside development, recreation grounds, parks, cemeteries, etc., which met at Washington, D. C., last month. Such research, it was stated, would be a means of developing improved turf for airfields, defense housing, roadsides and other places threatening to become "miniature dust bowls."

"As a result of the nation's war activities," said a declaration at the meeting, "millions of dollars are now

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being spent by the federal government for establishment and maintenance of turf on airfields, roadsides, defense housing projects, camps, forts, maneuver areas, cantonments, etc. Thousands of these areas are in existence today involving hundreds of thousands of acres, of which fully sixty per cent are bare, lacking any grass or ground cover.

"One of the most urgent, immediate needs for turf in the national defense program is for airfields. A grass cover on these fields, as protection against dust and mud, not only would help to safeguard the health of thousands of personnel, but also would greatly increase the life of motors and mechanized equipment.

"Airplanes and all mechanized equipment are subject to excessive wear from dust. On one army flying school field, it was found that the dust had decreased the efficiency of airplane motors ninety per cent due to dust wear on the cylinders. The cost of overhauling and reconditioning each motor was in excess of $1,600. With 200 planes on this field the cost of one overhauling was more than $320,000.

"This field is in an area where grass normally grows well. The complete grassing of this field of 800 acres should not have cost more than $100 an acre, or a total of $80,000, being twenty-five per cent of the cost of one overhauling of motors. It could have been reduced materially had the officials in charge been able to coordinate their construction and maintenance programs with the efforts of agricultural specialists in the culture of turf. A similar condition no doubt prevails in a large percentage of the new all-over airfields."

Such a program, it was said, "will benefit postwar activities incident to highway roadsides, parks, playgrounds, recreational areas, cemeteries, private estates, golf courses and other places."

"In order to avoid unnecessary delays," it was further stated, "it is urged that the bureau of plant industry be granted sufficient funds to expand its activities to serve many federal agencies now planting large acreages of turf grasses. Such a program should be cooperative with state experiment stations and the various public agencies dealing with grassing problems." B. J.

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Ilex Crenata Microphylla, 4 to 6 ins., B.R.	10.00	90.00
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Ilex Crenata Rotundifolia, 4 to 6 ins., B.R.	10.00	90.00
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This Business of Ours

Reflections on the Progress and Problems of Nurserymen

By Ernest Hemming

LABOR POLICY.

Labor policy is a touchy subject, and it is unfortunate that this is so. In a world-wide sense it is fundamentally one of the major ills of human society and a basic cause of the present war. Labor troubles and unions are a symptom of a disease, not the disease, and are caused by industrial irresponsibility. The cure is not the balancing power of collective bargaining, which is only a palliative. The real cure lies in industrial responsibility and the practice of Christain ethics. Unfortunately, the cure will be a long-time undertaking.

While the above statements are oversimplified but true, the solution is a very complex problem. In the larger sense there is little we can do.

At present the nursery industry is fearing unionization. Without a greater knowledge of conditions throughout the country, the writer cannot express himself on the subject with finality. It could be a catastrophe and bankrupt many of the smaller and poorly capitalized units, or it might be just an inconvenient personal bump for each one of us to go over. On the other hand, it could be a boon by disciplining the whole industry to better prices and principles, as did the ladies' garment workers' union. These unions actually brought order out of chaos, and in some cases the unions financed the weaker businesses until they got on their feet.

If you are really afraid of unions, there is always the possibility of removing some of the reasons for a union by doing as many of the little things for your employees as possible. Among these, one of the most important is to advocate social security. Why shouldn't our employees have a pension in their old age even though the work is not exhausting? The argument that because our business is a seasonal one and should not be taxed to provide unemployment compensation contradicts itself; all the more reason for the benefits.

Now that wages are higher, why not follow the wage-hour law? To do so would remove some of the seasonal restiveness among your men, as well as the interindustry labor competition.

It seems to be a truism that most arguments arise out of minor items. Why not be as generous to your men over little things as you can, even if economics prevent your doing much in any other way. Don't be picayune and petty. All of us have had troublemakers in our organizations; sometimes it is just a man who is really better than you can afford to hire. Why not encourage him to get a beter job? The other troublemakers the men themselves usually take care of.

Another goal that is ideal is to work to develop your organization into one that will give year-around employment to as many men as possible.

There is still another subject that comes under this heading that every one of us knows but says little about; that is the comparatively low wages paid by the nursery industry as a whole (perhaps excepting the present). There may not be anything we can do about it individually or little that we can do about it collectively, but there is no particular reason to be proud of it, and the philosphy of the lowest possible wage is wrong.

The writer has before mentioned in this column the nursery industry's own particular industrial irresponsibility wherein it attempts to hide behind the legal classification of farmers. It is truly and honestly a branch of agriculture, but I am afraid we are eager so to classify ourselves because the farmers are a polictically powerful group and the laws make exceptions for the farmer. With the present interim perhaps excepted, the farm labor situation is not ideal either.

We seem to have got into the philosophy that the idea is to fight labor in general, when the proper course is to fight the injustices and rackets and to encourage and perpetuate the justices, and the simplest solution is always to make voluntarily any corrective that is needed. E. S. H.

J. L. NALEN, 8 Grosback road, Yonkers, N. Y., has just purchased fifty-nine acres on Millerton road, in Bedford, Westchester county, on which he intends to specialize in growing hardy azaleas and hollies.

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PACHISTIMA CANBYI.

Pachistima canbyi is a native of the mountains of Virginia and West Virginia. It is a low, broad-leaved evergreen shrub of spreading habit, with decumbent and rooting branches. It is usually less than a foot high. The leaves are narrow-oblong, glossy green and about three-fourths to one inch in length. There is some tendency for the foliage to bronze during the winter months if the plants are used in full sun, but this is not so extensive that the plant becomes unsightly.

The Canby pachistima does not spread so rapidly as many of the other broad-leaved evergreen ground covers, although in peaty, well drained soil it covers rather extensive areas in a few years.

Some nurserymen and landscape gardeners have reported trouble growing this plant. One of the requirements for satisfactory growth is the provision of a well drained soil. If good drainage is provided, it will stand acid or slightly alkaline soil and sunny and at least partially shaded situations. Its preference is for a slightly acid, peaty or sandy soil.

Its flowers and fruits are unimportant from the ornamental standpoint. Besides its use as a ground cover subject, it can be used as a rock garden plant, for planting on dry walls, where it does well, and as a filler between larger evergreens in the foundation planting or in beds.

L. C. C.

ELECT AT INDIANAPOLIS.

Following plans for its formation discussed at the state convention earlier this year, the Indianapolis Landscape Association was organized at a meeting held March 16 at the office of the Midwestern Tree Experts Co., Indianapolis, Ind. Officers elected are: President, Ollie Hobbs; vice-president, L. A. Pottenger; secretary, Floyd Bass; treasurer, H. N. Engledow.

THE B. E. Williams Floral & Nursery Co., Dallas, Tex., has an electric eye trained on the near-by corner street light to turn off automatically display window lights and neon signs in the event of a blackout. Dallas has been adjudged near enough to the gulf to be included in the danger zone.

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Juniperus virginiana pendula	3.00	27.50
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Diseases of Trees

Gleanings from the Latest Reports of Scientific Research

By Leo R. Tehon

MIMOSA TREE WILT.

During 1940 the American Nurseryman carried an account of the first reports and the distribution then known of a new wilt disease of the mimosa tree, Albizzia julibrissin. This disease, it may be remembered, had been found in the Carolinas, especially in the vicinity of Tryon, N. C., in 1936 and later. With an ever-increasing range, by the close of 1940 it extended in scattered localities from Richmond, Va., to Hamilton, Ga. Its cause was reported to be a fungus, Fusarium perniciosum, which parasitized the vascular tissues of the tree.

Mimosa tree wilt has been under intensive investigation by E. Richard Toole, of the federal division of forest pathology, who has just published the results of his studies. Although much of his report is technical and therefore of most interest to plant pathologists, certain points seem to have general interest, in that they amplify or clarify earlier information.

Diseased trees are marked by a wilting and yellowing of the foliage. This is progressive and finally ends in the death of the tree. Stems, when cut, exhibit a brownish discoloration of the spring wood vessels of the outer, or last, annual ring. The fungus causing the disease can be seen in the discolored areas, if a microscope is used. In advanced stages of the disease pink spore-producing cushions of other saprophytic fungi are frequently seen on the bark, and ambrosia beetles of several sorts begin to make tunnels in both diseased and healthy parts of the wood.

The fungus, upon isolation in the laboratory, exhibits considerable variation, but generally follows one of three general types of growth. It may grow as an appressed, mostly slimy mat with only occasional purple cottony tufts; it may grow as a raised, felty to cottony mat of various purple shades, or it may grow as a raised, woolly, sclerotium-bearing mat. It also frequently exhibits the phenomenon of saltation or vegetative variation. As judged in reinoculation trials by ability to reproduce the disease in 3-year-old seedlings, the three types of growth are indicative of relative virulence. The raised, cottony type proved highly virulent; the raised, sclerotial type moderately virulent, and the appressed, slimy type nonvirulent.

The susceptibility of several tree species belonging to the leguminosae, the family to which the mimosa tree belongs, was tested by artificial inoculations under conditions suitable to the production of the disease in the mimosa tree. The species tested included Robinia pseudoacacia, Gleditsia triacanthos, Cercis canadensis, Mimosa pudica and three additional albizzia species, A. lebbek, A. lophantha and A. thoreli. In these tests none but the albizzias proved susceptible, and even among them A. thoreli appeared resistant. Albizzia lophantha, on the other hand, appeared more susceptible than A. julibrissin.

Transmission of the disease can be accomplished either by spores or by bits of the fungus itself. In nature the fungus produces spores only meagerly; consequently, they are of only minor importance in the natural spread of the disease. Transportation of the disease to widely separated localities is undoubtedly accomplished by the transportation of infected soil or plant parts. The ambrosia beetles which attack trees as the disease progresses are not regarded as important in its spread.

Entrance of the fungus parasite into trees takes place, apparently, through wounds or even directly through root hairs or the epidermis of small roots. Experimentally such penetration was obtained in twelve to twenty-four hours. After penetration, the fungus grows into the vascular system where, by its plugging effect and probable toxic action, it makes the foliage wilt and causes the tree to die. With young seedlings a period of about thirty days after penetration of roots by the fungus is required for symptoms of infection to show in the tops. This period is probably longer in the case of older trees.

As to the origin of mimosa tree wilt, two possibilities are advanced. First, it is suggested that, since the fungus concerned gives evidence of a striking tendency toward saltation, it is highly possible that it may have arisen as a variation from some native American fusarium. There is, however, no direct evidence available to show that this has occurred.

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Cornus florida plena, double, field plants, 12 to 15 ins., 15 to 18 ins., 18 to 24 ins. and up.
Cornus florida pendula, weeping, field plants, 18 to 24 ins., 24 to 30 ins. and up.
Cornus florida welchi, tricolored foliage, field plants, 12 to 15 ins., 15 to 18 ins.
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Second, the fact that a similar disease of this same tree is reported in Russia (although there the cause of the disease has never been properly studied) and the fact that the two diseases appeared suddenly in both the United States and Russia point to the possibility that the disease was introduced into both countries from some other original source. Some forty species of albizza grow in the tropical regions of the world, and it is possible that some one or more of these tropical species is normally attacked by this disease in the region where it is native.

L. R. T.

NEW PLANT PATENTS.

The following new plant patents were recently issued, according to Rummler, Rummler & Davis, Chicago patent lawyers:

No. 503. Apricot. E. M. Fehr, Lewiston, Ida. A new and distinct variety of apricot tree, characterized particularly by its vigorous growth, early ripening and heavy production of fruit of superior size, rich mild subacid flavor of fine quality, firm flesh and superior handling and canning qualities.

No. 504. Rose. Josephine D. Brownell, Little Compton, R. I. A rose variety characterized by its new and distinct constitution, including resistance to florescence, its long keeping character of the color of its petals and the form of its petals and variable within certain definite limits, its color varying from vermilion, flame, to peach and coral, overlaid with nasturtium, all in association with its habit of branching from bloom stems and from the base and blooming in hybrid tea manner, and its degree of freedom from premature defoliation by black spot during the growing season.

No. 505. Rose. Josephine D. Brownell, Little Compton, R. I. A hardy reblooming Rose wichuraiana climbing rose sport variety characterized by the characteristics of the variety Copper Glow with the additional character of intensive constant rebloom until frost.

No. 506. Peach. William T. Kirkman, Jr., Tracy, Cal., assigner to Kirkman Corp., Tracy, Cal. A peach tree characterized by the average larger size of its freestone fruit and later ripening period thereof, the unusual length of time the flesh remains firm after maturity and the outstanding color of its fruit, including a deep reddish streak following the suture, all as compared to the Rio Oso Gem.

No. 507. Peach. Ray B. Wiser, near Gridley, Cal. A new and distinct variety of late-maturing peach tree, characterized particularly by its vigor and heavy bearing ability; its willowy growth, the effect of which is greatly increased by its long, slender leaves, which are close-set on the branches; its prolonged harvesting season produced by the tenacity of its fruit to the tree; the symmetry and uniformity of size of its fruit; its great degree of disease resistance, and its clingstone fruit having outer appearance and flesh similar to that of the freestone Lovell fruit.

Lining-out Stock

Priced per 100, 25 at 100 rate.

	4 to 6 ins.	6 to 8 ins.	8 to 12 ins.
Ardisia Crenulata, seedlings	$ 2.50	...	...
Aucuba Japonica, variegated, 2½-in pots	10.00	...	...
Buxus Japonica	...	$ 6.00	...
Buxus Sempervirens	5.00	...	...
Camellia Sasanqua, Appleblossom, Rosea and **Mixed**	...	12.50	$15.00
Cornus Florida	1.50	2.00	2.50
Cotoneaster Pannosa and **Parneyi**	...	...	8.00
Elaeagnus Pungens	...	...	8.00
Euonymus Japonicus, Green and variegated	...	6.00	7.50
Eurya Japonica	...	6.00	...
Feijoa Sellowiana, Pineapple Guava	6.00	8.00	10.00
Gardenia Florida, Fortunei, Hadley and **Mystery**	...	5.00	7.00
Gardenia Radicans, dark green variety	5.00	6.00	8.00
Gardenia Veitchi, 3-in. pots	...	...	15.00
Ilex Crenata Rotundifolia	...	6.00	8.00
Jasminum Floridum	...	5.00	7.00
Pittosporum Tobira, (green)	...	5.00	7.00
Pyracantha Rogersiana Aurantiaca	...	...	10.00
Viburnum Macrophyllum	...	6.00	8.00
Cedrus Deodara	...	8.00	10.00
Cunninghamia Lanceolata	...	...	10.00
Juniperus Chinensis Pfitzeriana	...	10.00	12.50
Retinospora Plumosa	...	6.00	7.50

Also Camellia and Azalea liners; write for list.
BLACKWELL NURSERIES, Semmes, Ala.

1893 1942
We Offer—
FOR SPRING 1942
SHRUBS EVERGREENS
SHADE TREES
APPLE, PEACH, CHERRY AND PEAR TREES IN ASSORTMENT.
BARBERRY—Green and Red
CALIFORNIA PRIVET
2-yr. ASPARAGUS PLANTS, etc.
Write for trade list.
THE WESTMINSTER NURSERIES
Westminster, Maryland

DAPHNE CNEORUM
7 to 9 ins., $4.00 per 10, $35.00 per 100.
9 to 12 ins., 5.00 per 10, 40.00 per 100.
Transplants from layers and divisions, $6.00 per 100, $46.00 per 1000.
Packing at cost.
EDEN NURSERIES Eden, N. Y.

Old English
BOXWOOD
(Wholesale Only)
Greatest Assortment of Large and Small Specimens in U. S. 10 inches to 6 feet.
BOXWOOD GARDENS
Mrs. R. P. Royer High Point, N. C.

Hardy Pecan Trees. Grafted Black Walnut. Heartnut Trees. Budded varieties of native Persimmon. Sweet Cherry Trees.
Write for price list.
44 years growing trees.
J. F. JONES NURSERIES
Dept. T-142 Lancaster, Pa.
J. F. JONES NURSERIES

PRONOUNCING DICTIONARY of Plant Names
64 pages, 3000 names, **25c** per copy
American Nurseryman Chicago

Production Costs

In connection with his talk on the costs of landscape planting before the Nebraska Nurserymen's Association, Vernon Marshall, of Marshall's Nurseries, Arlington, Neb., offered some comments on growing stock in the nursery, which wholesale growers may find of interest. His figures are bare costs of production, not including overhead and sales expense, it should be noted.

The cost of growing nursery stock is a topic that could be discussed from now on without much probability of arriving at anything definite. This is a matter which is a problem with every nurseryman. In some cases he may think he knows the answer; in other cases he struggles along trying to find the answer, and in many cases he does not pay much attention to the matter. There are so many angles to be considered in the figuring of the costs of growing that it is my opinion it would take years of experience to strike an average that could be called fair as to the cost of growing the various items of nursery stock.

For instance, let me cite the following figures from our own experience of growing apple trees especially. In our spring 1936 planting of grafts, which were dug in the fall of 1938, we dug sixty per cent, approximtely, of the number of grafts planted. The trees were clean, well up to grade, free from aphis and crown gall, and we considered them a good block of trees. From the spring 1937 planting, which was dug in the fall of 1939, we had a slightly better stand, digging approximately seventy per cent of the grafts planted; however, fifty per cent of what were dug were thrown away on account of root knot and aphis, mostly aphis, which left a net of thirty-five per cent of the original planting that we harvested. From the spring 1938 planting, which was dug in the fall of 1940, we had a stand of about seventy per cent, practically all of which were killed by the Armistice day freeze that year. From the spring 1939 planting, which was dug in the fall of 1941, stands were poor, being only about forty per cent of the original planting; however, they were mostly clean, but some losses due to the freeze injury of 1940 cut the marketable stock to below forty per cent. You can see we had an entirely different experience each year, so that cost figures arrived at for any one of those four crops would not have applied to any one of the other three. So, if anyone were to say that it costs so much to grow apple trees to a finished nursery product, it would be more of a guess than an actual figure. The same would be true with most other fruit trees, as there is constant variation of stands of buds, stands of understocks and various other things affecting the stock up until the time it is dug for storage.

Regarding the cost of growing ornamental shrubs, I would say that the average cost of the group comprising all of the spiraeas, vines, coralberry, snowberry, dogwood and shrubs of this class would be about as follows: Two cents, cost of the lining-out stock planted, if you produce the lining-out plant yourself. Average stand, probably seventy per cent. Grown two years and dug at a cost of 3 cents each, graded and ready for sale at a cost of 1 cent each, making a total of 6 cents on a shrub grown two years. I think 2 cents should be added for this same shrub if held over in the nursery another year, making a total cost of 8 cents for a shrub 3 years old.

On another group comprising such shrubs as snowball, highbush cranberry, lantana, beautybush, cotoneaster, hydrangeas, Chinese lilac and red barberry, which probably shows a somewhat lower percentage of stand, say sixty per cent, the lining-out stock and cost of planting in the nursery would be approximately 4 cents, growing two years 2 cents, digging and grading 3 cents, making a total cost on 2-year-old plants of 9 cents each. Adding 2 cents each for holding over one more year in the nursery would make a cost of 11 cents for 3-year-old plants in these varieties.

Now, I am not willing to guarantee these costs, and no doubt some nurserymen would have somewhat different ideas on the costs of growing these items, but from our experience these figures would seem to me to be about right.

HANDLING HEAVY BALLS.

A short cut in handling nursery material too heavy for men to lift by hand, by using a common one-horse dirt scoop, is described in the current bulletin of the Maryland Nurserymen's Association by William M. Rhodes, of A. Gude & Sons, Rockville, Md., as follows:

"Remove handles from scoop, also the hitch in front, and replace iron hitch with a rope with loops in each end to hook on lugs of scoop. Tip ball forward toward truck and put scoop under it; then loop rope to lugs and hook winch cable in rope. You can handle trees carrying as much as a 3½-foot ball, pulling them out of holes and nursery rows to a road, in quite muddy ground. Use skids or plank to load upon truck and the metal scoop slides freely.

"We have used this easy way on trees we were transplanting without any burlap, lacing them on platforms,

1870 1942
WE STILL OFFER—
A very complete assortment of
HIGH-QUALITY NURSERY STOCK
Write for Bulletin No. 2 for latest Grade Counts.
LAKE'S SHENANDOAH NURSERIES
Shenandoah, Iowa
"We are prepared to fill and ship your orders promptly."

Weller's Perennials with that Wonderful Root System
AMERICA'S LEADING PERENNIAL GROWERS
See our ads in December 1 and 15 issues or consult or ask for our general catalogue.
Southern Growers!
We can ship at any time.
WELLER NURSERIES CO., Inc.
Holland, Mich.

LINING-OUT STOCK

For prices and varieties
see our
2-page advertisement
in the April 1 issue

FAIRVIEW EVERGREEN NURSERIES
FAIRVIEW, Erie Co., PA.

EVERGREEN LINING-OUT

	Per 1000
Andorra Juniper, 8 to 12 ins., XX.	$120.00
Pfitzer Juniper, 2-in. pots, 4 to 6 ins.	100.00
Pfitzer Juniper, 2-in. pots, 6 to 8 ins.	120.00
Mugho Pine, 4 to 6 ins., X.	100.00
Austrian Pine, 6 to 8 ins., X.	60.00
Austrian Pine, 8 to 12 ins., X.	70.00
Scotch Pine, 8 to 12 ins., X.	60.00
Scotch Pine, 12 to 15 ins., X.	80.00

Two hundred at the thousand rate.

HOOK'S NURSERY
Box 25 HIGHWOOD, ILL.

EVERGREENS

Fine lining-out stock for immediate shipment.

	Per 25	Per 100	Per 1000
Taxus cuspidata, Spreading Yew			
4 to 6 ins., X.	$2.50	$ 7.50	$ 70.00
6 to 8 ins., X.	3.00	10.00	85.00
8 to 10 ins., X.	3.50	12.50	110.00
Azalea amoena 4 to 6-in. spread.		10.00	80.00
Chinese Arborvitae			
4 to 6 ins., X.		2.00	18.00
6 to 8 ins., X.		3.00	25.00

ESHAM'S NURSERIES
Box 65A, Frankford, Del.

Wholesale growers of the best
Ornamental Evergreens,
Deciduous Trees,
Shrubs and Roses.
Write for our current trade list.
THE KALLAY BROTHERS CO.
Painesville, Ohio

JUNIPERUS PFITZERIANA
Strong Rooted Tip-Cuttings
$3.50 per 100, $30.00 per 1000
Sample of 12 sent prepaid for 50c Defense Saving Stamp.
J. B. BEALLE Greenwood, Miss.

WHOLESALE GROWERS
Specializing in
EVERGREEN SEEDLINGS
TRANSPLANTS AND APPLE TREES
Write for price list.
Send us your trade list.
MATHEWS EGGERT NURSERY
North Muskegon, Mich.

BURTON'S
HEADQUARTERS FOR
EVERGREEN GRAFTS, TRANSPLANTED EVERGREENS, SHRUB LINERS.
RARE ITEMS YOU DO NOT FIND IN MOST LISTS! *Write!*
HILLTOP NURSERIES
CASSTOWN, OHIO

and find it time and laborsaving. It is quite satisfactory on material well rooted, such as deciduous magnolias, boxwood, retinosporas, etc. Of course, you can use it equally well on burlapped and laced balls, eliminating use of platforms.

"In transplanting about the nursery, a horse hitched to this outfit can go anywhere, using the scoop as a slide. It will not injure lawns or roadways."

LABORSAVING DEVICES.

Nurserymen faced with a shortage of help will wish to become better acquainted with laborsaving equipment available. The ingenuity of manufacturers is increasing the number of devices that can be employed for various jobs in the nursery and about the country home or estate.

In a little booklet, "Six Upkeep Problems about the Country Home," are some helpful suggestions for the person who has a small acreage about a suburban home. Nurserymen may likewise be interested in some of the equipment described in the booklet, which may be obtained from the Gravely Motor Plow & Cultivator Co., Dunbar, W. Va.

Larger nursery operators may be interested in the new high-speed tractor rake, which is now being built especially to operate behind farm tractors. It has many features that the old-type horse rakes do not have, and the demand for it is large. It is shown in several sizes in the new catalogue of the Field Force Mfg. Co., Pottstown, Pa., long known for sprayers of various types. According to Fred S. Bateman, president, the possibility of filling more orders than are now on hand depends upon the allotment of materials by the O.P.M.

ESPECIALLY good during March, nursery business was slowed down early in April by dry weather, but ample rain renewed the increased buying in the southwest, reports J. Frank Sneed, of the Sneed Nursery Co., Oklahoma City, Okla. The public is buying much nursery stock, he says, though more of the cheaper items and smaller plants. Loss of several keymen to the army is reported by Mr. Sneed, who says a number of nursery dealers in the territory will be called to regular duty in the next thirty days.

NORWAY SPRUCE SEEDLINGS

Special Reduced Prices

	Per 1000
2 to 4-in. sdlgs.	$10.00
4 to 6-in. sdlgs.	15.00
6 to 10-in. sdlgs.	20.00
10 to 12-in. sdlgs.	30.00
12 to 15-in. sdlgs.	35.00
15 to 18-in. sdlgs.	40.00

(300 trees at 1000 rate)

New complete wholesale list now ready. Write for copy.

SHERMAN NURSERY CO.
Charles City, Iowa

Heavy
Pfitzer Juniper Liners

	Per 1000
4 to 6 ins., 2¼-in. pots.	$ 80.00
6 to 8 ins., 2¼-in. pots.	100.00

Select
Chinese Elm Trees
3-inch to 6-inch caliper
SNEED NURSERY CO.
P.O. Box 798 Oklahoma City, Okla.

COLORADO BLUE SPRUCE
2-year seedlings

	Per 100	Per 1000
(2-0) 0 to 2 ins.	$2.00	$9.00

F.o.b. Fennville

Seedlings grown from seeds from cones hand picked from blue trees in Colorado.

Michigan-grown seedlings.
WALTER A. STUDLEY, NURSERY
Dept. AN Fennville, Mich.

Lining-out Evergreens
Good assortment of standard varieties.
Price list on request.
SCOTCH GROVE NURSERY
SCOTCH GROVE, IOWA

ARBORVITAE
Goldspire, 3 to 5 ft., 75c.
Abelia Grandiflora
3 to 4 ft., once cut back, bushy, 50c.
These prices are for B&B plants at nursery or in carlots F.O.B. our shipping point, La Grange, Ga.
Mountville Nurseries, Mountville, Ga.

Raspberries - Blackberries - Grapevine
Strawberries - Rhubarb SPECIAL PRICES ON RHUBARB
General Line of Small Fruit Plants
Trade list sent upon request
L. J. RAMDO'S WHOLESALE NURSERIES
Bridgman, Mich.

New Books and Bulletins

HANDBOOK OF TREES.

For the person not acquainted with the scientific language of botanical keys or guides to trees, a handy little volume will be found useful not only for identification of trees, but also for its information about woodcraft and wild life uses. "Trees of the Eastern United States and Canada," just issued by the McGraw Hill Book Co., at $2.75, is by Dr. William M. Harlow, assistant professor of wood technology at the New York State College of Forestry, Syracuse University. He has taught tree identification, served as ranger and forester, acted as camp director and taught campcraft. So he realizes the needs of the great majority of persons to make them familiar with the trees they may encounter in the eastern part of this continent.

Following a short introduction and general key, comments on each important tree appear under their individual headings. A large number of photographs give details of leaves, flowers, fruits, bark and twigs. A full index makes the 300-page volume the more useful.

VEGETABLES IN LEGENDS.

To the many enthusiastic gardeners who like not only to grow things, but to read about them as well, the books of Vernon Quinn have held interest. They have told of the place in life and legend of different groups of plants. Four earlier books were on shrubs, roots, leaves and seeds. Now the fifth is "Vegetables in the Garden and Their Legends," published by J. B. Lippincott Co., at $2.50.

BULLETINS RECEIVED.

The office of foreign agricultural relations of the United States Department of Agriculture has just issued foreign agricultural reports 1, 2 and 3, discussing the fruit industry of Argentina, Brazil, and Chile, respectively. They were written by Fred A. Motz, fruit specialist. The three countries are not important as American fruit markets, but are endeavoring to develop foreign markets for their own recently increased fruit production. The limited exports, chiefly inferior to American in quality, have been to European countries and, therefore, considerably affected by the war.

"Fruit Varieties for Minnesota," by E. M. Hunt, extension bulletin 224 of the Minnesota agricultural extension service, indicates six zones of hardiness in the state and lists the varieties of fruit suitable for each. The larger part of this 16-page bulletin is devoted to brief descriptions of fruits and berries, useful to those interested in the home fruit planting part of the victory garden campaign.

The plant pest law of Ohio which became effective August 6, 1941, is now published in a 28-page pamphlet, together with rules and regulations pertaining to its enforcement. There is additional pertinent information, such as a table of the types of plants requiring certification for entry into other states and a nursery stock shipping guide showing the requirements of the various states.

The annual report of the Colorado bureau of plant and insect control, submitted by F. Herbert Gates, state entomologist, is in the form of a mimeographed pamphlet of forty-two pages, letterhead size, accompanied by copies of the legislation and quarantines under which the bureau acts.

HELPFUL PERENNIAL LIST.

A 6-page folder listing many perennials, with botanical name, common name, blooming time, color and height, is issued by Shadow Valley Gardens, Wheatridge, Colo., to enable their customers to make the right selection in order to have bloom in their gardens all summer long. The owner of the Shadow Valley Gardens is Mrs. Helen K. Flower, whose talk on perennials was one of the high lights of the recent Colorado nurserymen's short course.

CATALOGUES RECEIVED.

Mount Arbor Nurseries, Shenandoah, Ia.—Wholesale bulletin No. 2, dated April 1, offers complete nursery stock, 84 pages, 6x9 inches.

Chase Nursery Co., Chase, Ala.—Spring surplus bulletin No. 2 of general stock, 12 pages, 7¾x9 inches.

Charles H. Williams Nurseries, Exeter, N. H.—Wholesale price list of hardy native trees, shrubs and plants, 16 pages and cover, 4x9 inches.

Harmon Nursery, Prospect, O.—Wholesale price list of general stock, 6-page circular, 5½x8½ inches; also sheet of lining-out stock, 8½x11 inches.

Carr's Nurseries, Yellow Springs, O.—Wholesale trade list of lining-out evergreens, 8-page circular, 3x7¼ inches.

Hoodacre Originating Gardens, Troutdale, Ore.—Retail catalogue of delphiniums lists also iris and perennials, 40 pages, illustrated, partly in color, 5¼x8¾ inches.

Lake's Shenandoah Nurseries, Shenandoah, Ia.—Wholesale bulletin No. 2, dated April 7, of complete line of stock, 72 pages and cover, 6x9 inches.

FRED J. NISBET, recently practicing as a landscape architect at Wilkesboro, N. C., and formerly employed by the Bay State Nurseries, North Abington, Mass., will be in military service before the end of this month.

WHILE on a tour of the Gulf coast states, visiting nurseries from Texas to Alabama, Mr. and Mrs. Alex Tuschinsky and Mr. and Mrs. Lloyd Pottenger, Indianapolis, Ind., visited the latter's son, Richard, who is in an army camp at San Antonio, Tex.

CLOVERSET POTS

Patent No. 2073695

Now made in four sizes and two grades, comparable in soil capacity to 6-in., 7-in., 8-in. and 9-in. clay pots. Prices as low as $18.50 per 1000.

Cheap in price (can be given away with the plant). Non-Porous (slow to dry out), produce a better plant than a clay pot, make better satisfied customers and more profit for the Florist and Nurseryman.

Send for free circulars and prices. Sample carton sent by mail for 25c.

CLOVERSET FLOWER FARM, 105th & Broadway
ERNEST HAYSLER & SON Kansas City, Mo.

HOBBS

PEACH, Leading Varieties.

ELM, American, 8 to 10 ft. up to 2½-in.

MAPLE, Norway, 8 to 10 ft. up to 5-in.

WILLOW, Thurlow, 8 to 10 ft. up to 3½-in.

Large stock of Evergreens up to 5 to 6 ft.

Juniper, Pfitzer, 1200 3 to 5 ft.

Shrubs, Roses, etc.

C. M. Hobbs & Sons, Inc.

Bridgeport, Indiana

Oldest and Largest Nursery in Indiana
Established 1875

JUNIPERUS SCOPULORUM

2-year Seedlings

	100	1000
4 to 6 inches	$4.50	$40.00
6 to 9 inches	6.00	55.00
Bed run	6.00	50.00

B&B Specimens

	10	100
12 to 18 inches	$0.90	$0.75
18 to 24 inches	1.10	.90
24 to 30 inches	1.60	1.40
30 to 36 inches	1.90	1.75

Cash prices.

DIAL NURSERY

1906 N. Cooper, Colorado Springs, Colo.

5000 **Red Cedar,** 2-year transplanted, 18 to 24 ins., good roots, well shaped, green tops. First order gets the block. 4c each. Boxed roots, puddled. F.o.b. McMinnville, truck, freight or express.

10,000 **Red Snowberry,** 2-year transplanted, well branched, 12 to 24 ins., $10.00 per 1000.

10,000 **Cornus Stolonifera,** Red-stemmed Dogwood, nursery-grown, 18 to 24 ins., $10.00 per 1000.

Write or wire

TARLTON NURSERIES

MORTON BROS.

McMinnville, Tenn.

GRAPEVINES, GOOSEBERRIES CURRANTS and BERRY PLANTS

Growing for the wholesale trade since 1890. The quality of our plants will please your most critical customers. Get our attractive quotations before placing your order.

THE F. E. SCHIFFERLI & SON NURSERIES
Fredonia, N. Y.

PEACH PITS

Our Pits Compare Favorably With the Best

HOGANSVILLE NURSERIES

HOGANSVILLE, GEORGIA

HERBS

Pot-grown plants: over a hundred varieties. Dried Herbs for Flavoring and Fragrance.

Other plants of unusual character and with the charm of old-time gardens.
New Catalogue sent on receipt of 10 cents.

WEATHERED OAK HERB FARM, INC.
Bradley Hills, Bethesda, Maryland

ROSE SOCIETY TO MEET.

The forty-fourth annual meeting of the American Rose Society will be held at Knoxville, Tenn., May 14 to 16, with the Knoxville Rose Society as host. Headquarters will be at the Hotel Johnson.

The Knoxville Rose Society will stage a rose show the first day of the meeting.

There will be important round-table discussions on rose understocks, and rose feeding, and a comparison of new patented hybrid tea roses with old-established hybrid teas.

Among the prominent speakers will be Dr. L. M. Massey, of Cornell University, and E. A. Piester, assistant superintendent of parks, Hartford, Conn.

Edwin H. Rappe, Baltimore, is collecting Kodachrome slides of rose pictures taken by members all over the United States to show after the banquet on the evening of May 15.

A trustees' meeting will be held May 14, and the regular business meeting and election of officers May 16.

There will be visits to gardens and points of interest in Knoxville.

This will be the only meeting of the American Rose Society during 1942. R. Marion Hatton, Sec'y.

TWIN CITIES MEETING.

The Twin Cities Nurserymen's Association held a closed meeting March 25 at St. Paul, Minn. Grant E. Perl, former president of the association, was requested to represent that body at the formal presentation of the Ruedlinger memorial award at University Farm March 26 during the annual horticultural short course in the Auditorium.

Prof. W. H. Alderman, chief of the division of horticulture, paid a glowing tribute to the late C. E. Ruedlinger and his work in all phases of horticulture. Edward P. Lana, graduate student, then gave his paper, which had won the $25 award, the subject being "Fire Blight and Its Control." A brief outline of the topic was handed to all present. The audience numbered a little over 300.

L. G. Holmes, landscape architect of the Lake City Nurseries, Inc., Lake City, gave a much-appreciated talk on "The Principles of Landscaping." The talk was presented in a novel manner, the speaker using a rough outline of a home.

RASPBERRY PLANTS

Taylor
Latham
Chief
Marcy
Indian Summer

★ ★ ★ ★

COLORADO BLUE SPRUCE

Lining-out grade
Transplants and Seedlings

★ ★ ★ ★

FOREST TREE SEEDLINGS

Ash
American Elm
Chinese Elm
Soft Maple

★ ★ ★ ★

Send for Trade List.

ANDREWS NURSERY CO.
Faribault, Minn.

Write us for
SPECIAL PRICES
on

Apples — Cherries, Sweet and Sour
Peaches—Plum—Pear—Quince
WE CAN SELL AT A PRICE THAT WILL BRING REAL PROFITS TO YOU.

KELLY BROS. NURSERIES
DANSVILLE, N. Y. *Since 1880*

CULTIVATED BLUEBERRY PLANTS

In all commercial varieties and sizes.

H. L. WILLIS
East Lansing, Mich.

SMALL FRUIT PLANTS

Evergreens—Shrubs
Lining-out Stock

Send for Complete Trade List

W. N. SCARFF'S SONS
New Carlisle, O.

Wholesale Growers of

Grapevines, Currants, Gooseberries, Blackberries and Raspberries

Let us quote on your requirements

FOSTER NURSERY COMPANY, INC.
69 Orchard St. Fredonia, N. Y.

Locust Borer Control

The locust borer, Cyllene robiniae, is a destructive forest and shade tree insect widely distributed in the United States and Canada. Injury to trees is caused by the larvae, or grubs, and consists of large burrows in the sapwood and heartwood of the trunk and larger branches. Although the trees may not always be killed outright, a heavy infestation renders them unfit for useful products or disfigures them for ornamental purposes. Trees may be so badly weakened by this insect that a slight wind will cause them to break off at points of serious attack.

Because of its important soil-binding and building capacity and its extensive root development, black locust, Robinia pseudoacacia, has been used widely in recent years in soil conservation programs throughout the United States. The larger proportion of these trees have been planted on soils badly eroded by wind or water and severely depleted of soil nutrients by poor farming practices. Such plantings furnish an ideal environment for the locust borer and create conditions favorable for high larval survival and subsequent severe damage. For this reason the locust borer problem is assuming increasing importance in all such areas where black locust has been extensively planted.

To meet this problem, a bulletin on the control of the locust borer, circular 626, has just been issued by the United States Department of Agriculture. It was written by Ralph C. Hall, assistant entomologist in the division of forest insect investigations.

The adult locust borer is a long-horned beetle about three-fourths of an inch in length. It is deep velvety black, marked with bands of bright yellow. The adults are found in large numbers on goldenrod in late summer or early fall. The flowers of this plant furnish the principal food of the beetles. The females deposit their eggs in the rough crevices of the bark or around wounds on black locust, from the last of August to the middle of October. The eggs hatch in about a week and the young larvae, or grubs, bore their way into the inner bark, where they pass the winter in a dormant state. Early in the spring, the larvae resume their activity and finally work into the woody portion of the tree.

The presence of the larvae under the bark is easily detected early in spring about the time leaves begin to unfold. New attacks are then indicated by characteristic wet spots and the brown or yellow pellets of excrement pushed out of openings through the bark at the entrances to the larval galleries. After the larvae have entered the wood of the tree they push out white or yellowish excrement or "sawdust" through these openings.

Vigorous trees are less likely to be damaged by the locust borer. So in farm plantings certain silvicultural methods are employed to promote the vigor of the trees, such as clear-cutting, thinning and the use of mixed stands.

In the case of ornamental trees or small planted areas, more direct control measures may be followed, though too costly for larger stands. Mulching with hardwood leaves is helpful. While no complete control has been developed, the most effective is a spray of orthodichlorobenzene. For this is made a stock emulsion of one gallon of orthodichlorobenzene, one gallon of soft water and one pound of fish-oil soap or common laundry soap. The soap is dissolved in boiling water, and after the mixture has cooled sufficiently the orthodichlorobenzene is added. To one part of the stock emulsion six parts of soft water are added to make the spray material. The spray should be applied so as to cover the trunk of the tree completely, especially from the ground line up to five or six feet, and when the air tempera-

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ture is above 70 degrees Fahrenheit. Early spring, when the locust leaves are just beginning to unfold, is the best time to spray.

As certain lots of crude orthodichlorobenzene which have been used experimentally have shown a toxic effect on the tree, the spray should be applied to one or two trees at first to test it for the toxic effect. If after one week no signs of leaf wilting or burning are noted, it will be safe to complete the spraying.

CENTRAL BOARD ELECTS.

Meeting at the Union building of the University of Illinois, Urbana, March 24 and 25, the Central Plant Board elected the following officers: President, H. F. Seifert, Illinois; secretary, T. L. Aamodt, Minnesota, and representatives on the National Plant Board, L. M. Gates, Nebraska, and C. A. Boyce, Michigan.

Important among the discussions was consideration of the regulatory officials' duties in the all-out victory program and the report of the uniform regulations committee.

The central state entomologists met at the same place the following two days, March 26 and 27.

OBITUARY.

Mrs. Elizabeth W. Offenberg.

Mrs. Elizabeth W. Offenberg, wife of Paul Offenberg, president of the Paul Offenberg Nursery Co., Columbus, O., died March 31 after a short illness. She was born in Holland and came to America in 1920.

Frank A. Tetley.

Frank A. Tetley, pioneer nurseryman of Riverside, Cal., where he was head of the firm of F. A. Tetley & Son, died March 31 of a heart attack, which occurred three days before. He was 75 and had long been prominent in political and civic circles of his community.

T. T. Finney.

T. T. Finney, retired nurseryman, who operated a nursery and orchard for many years five miles west of Millersburg, O., died April 1 at an Akron rest home. He was 88 and started in the nursery business with his uncle, John Finney, at the age of 12. Surviving are three daughters and a brother.

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DISEASE OF CHINESE ELM FOUND IN COLORADO.

Numerous Chinese elm trees on the eastern slope of Colorado showed signs of failure last spring. Many of the trees failed to leaf out, while the leaves on others were small and sparse. Most of the trees in this condition are now dying or dead. Writing in the quarterly bulletin of the Colorado experiment station, J. L. Forsberg, of the botany and plant pathology section, said: "Unseasonable freezing or winter injury has been blamed for a great deal of this trouble. However, while such freezing may play a part in weakening the tree, the direct cause of death is a fungus which gains entrance through a wound or break in the bark and attacks the living tissues.

"The most reliable sign which distinguishes this disease from winter injury is the presence of reddish-orange threadlike coils or tendrils, known as spore horns, which come through the bark. These spore horns usually do not appear until the late stages of the disease; under wet conditions they may tend to spread out over the surface of the bark. The spore horns are composed of thousands of tiny one-celled spores which cannot be seen without the aid of a microscope. Each spore is capable of developing into a new fungus. Spores may be carried to other trees by birds, insects or wind. They may even be splashed to adjacent trees by rain. When the spores get into any kind of wound or injury on an otherwise healthy tree, a new infection is started, and it is only a matter of time until the tree shows symptoms of the disease.

"The inner bark on the trunk of an infected tree is usually dead and appears brown, spongy and wet. No distinct cankers (sunken lesions) are evident, but the entire tree eventually dies. Small, black, fruiting bodies (pycnidia) of the fungus may be found embedded in the bark. The spore masses are formed within these fruiting bodies. In wet weather these masses ooze out to form the spore horns.

"Although this is a new disease on Chinese elms, and much remains to be learned about it, some important facts are apparent. The causal agent has been found to be a fungus known as cytospora. Species of cytospora are common on cottonwoods, Lombardy and Bolleana poplars, willows and other trees. The disease is most severe on these trees when they are growing under adverse conditions. This does not seem to be true in the case of the Chinese elm, since trees now dead apparently became infected by cytospora when they were receiving the best of care and were growing under supposedly favorable conditions. Perhaps the best explanation of this situation is that the Chinese elm is not a native of this country, but was introduced from Asia.

"Unfortunately there is no cure for a disease of this kind. Once a tree becomes infected, death is the ultimate result. Control measures, therefore, must be directed toward preventing spread of the disease. Trees showing spore horns of the fungus should be removed and burned immediately. It is not sufficient merely to cut the tree down and expect to use it for firewood later. Spore horns may be produced from the bark of infected trees for a long time after the tree is dead.

"Although spraying might reduce the infection and might kill some of the exposed spores, more spore horns will grow through the bark in from twenty-four to forty-eight hours during wet weather. Thus to make a spray program effective the tree would have to be sprayed too often.

"There are certain growing conditions which appear to favor development of the disease. Trees which enter the winter in too soft a condition are much more subject to freezing injury and consequent attack by parasitic organisms than trees which have been allowed to harden off properly. For this reason it seems best that the trees should not be watered too heavily late in the fall."

BARBERRY IS HEALING.

Berberis vulgaris, the barberry plant which has given wheat growers a great deal of trouble because it harbors a fungus of one form of rust, has been found to contain a healing substance valuable in the treatment of wounds.

In a report to the Association of Military Surgeons, Captain Warner Bowers disclosed that the barberry plant gives results similar to chlorophyll, which has also proved valuable in stimulating the healing of wounds.

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MEET AT LOS ANGELES.

The headquarters of the Southern California Nurserymen's Association have been moved to the exhibit rooms in the basement of the Chamber of Commerce building, Los Angeles.

At the meeting scheduled for April 14, at the Royal Palms hotel, Lee Hewitt, of the bureau of nursery service, was to discuss and clarify the subject of nursery licenses. Manchester Boddy, publisher, who was recently engaged in commercial growing, was also on the program.

ARTHUR RUEDLINGER, of the Ruedlinger Nursery, Minneapolis, Minn., has returned to his home after an operation at the hospital.

J. K. UZUHASHI has sold the nursery stock, tools and equipment of his Home Grown Nursery, 2335 Sawtelle boulevard, West Los Angeles, Cal., to Althea O. Ware.

A. A. SCHNIEROW has purchased the stock, fixtures, equipment and good will of the West Side Nursery, 1128½ West Thirty-ninth street, Los Angeles, Cal., from Ben Andow Katsugoro.

WILLIAM YONKER has opened Yonker's Holland-Dutch Nursery at 7534 Reseda boulevard, Reseda, Cal. Mr. Yonker learned landscaping and nursery work in Holland, Switzerland and Java.

WILLIAM CECIL, California director of agriculture, was the speaker at the dinner meeting of the Superior California Nurserymen's Association, held at the Hotel Sacramento, Sacramento, April 8.

THE nursery stock, greenhouses and general equipment of La Fleur de Pico Nursery, 11373 and 11401 West Pico boulevard, Los Angeles, Cal., have been sold by Alfred M. and G. Adachi to Frank X. Montoya.

GILBERT KINDLE has leased the Stonehurst Nursery, Oakland, Cal., from Harry Korematsu. Mr. Kindle has been in the business for some years, but only recently became interested in landscaping.

THE contract for landscaping the big housing project at McChord field was recently awarded to R. R. Williams, proprietor of the Puget Sound Nursery, Inc., and Garden Shop, 9201 Pacific avenue, Tacoma, Wash.

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Idared, described as a strikingly beautiful new variety of apple of excellent quality, has recently been named and introduced by the Idaho agricultural experiment station. The best selection of nearly 12,000 apple seedlings grown and tested at Moscow, it is a cross between Wagener and Jonathan. It is somewhat larger than either parent, and in shape it is intermediate between the two. The color is nearly solid, bright red. The flesh is creamy white, crisp, tender and juicy. The core is unusually small. In baking, Idared retains its form as well as Rome Beauty and is said to be superior to that variety in flavor.

Unlike Jonathan, this new variety is not especially susceptible to fire blight, and it is not subject to Jonathan spot. It remains sound and of good eating quality in an air-cooled storage until April or later. The tree is moderately vigorous and bears at an early age.

No restrictions will be placed on the propagation or sale of this variety. A limited supply of scion wood for propagation in the spring of 1942 will be available for experiment stations, growers and nurserymen desiring to test this variety. Bud sticks will be available in August for fall budding of nursery stock.

CONNECTICUT SELLS TREES.

The forester of the Connecticut agricultural experiment station, New Haven, in announcing that the 1942 price list of forest planting stock is now available for residents of that state, stated the varieties listed for sale the coming spring are white and red pines, Norway and white spruces and Douglas fir, at $12 per thousand.

The trees are grown at the station nursery at Windsor and average 3 or 4 years of age. Over a million such trees are available. The price list cautions that they are forest planting stock and are not intended for ornamental purposes.

Connecticut is said to be the first state to initiate the service of supplying forest planting stock to residents to encourage reforestation. During the past thirty-five years the station has distributed over 18,000,000 forest trees and estimates today there are 28,000 man-planted acres of forest in Connecticut, 8,000 of which compose state forest land.

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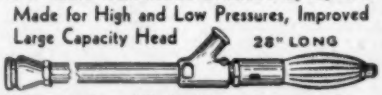

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Chinese Blight-resistant Chestnut and Thomas grafted Black Walnut, 7 to 8 ft., 1¼-in., $12.00 per 10.
European White Birch, 8 to 10 ft., $10.00 per 10.
Chinese Elm, 6 to 8 ft., straight, $6.00 per 10.
Richardi Golden Poplar, 5 to 6 ft., $2.50 per 10.
Niobe Weeping Willow, 5 to 6 ft., $2.50 per 10.
Strawberry: Dunlap, Cresco, Dorsett, Bellmar, Pathfinder, $4.00 per 1000.
Latham Raspberry, No. 1, $12.00 per 1000.
Pin Oaks, 3 to 4-in. Write for prices.
Whitford Nursery, Farina, Ill.

LINING-OUT STOCK.	Per 100	Per 1000
Euonymus Europaeus, 2-yr., 10 to 12 ins.	$2.00	$15.00
Euonymus Europaeus, 2-yr., 12 to 15 ins.	2.50	20.00
Euonymus Europaeus, tr., 2 to 2½ ft.	6.00	50.00
Euonymus Vegetus, 2½-in. pots	6.00	57.50
Caragana Lorbergi (new!), 1-yr. from grafts	15.00	....
Cotoneaster Acutifolia, No. 1	5.00	....
Forsythia Primulina, NEW	4.00	....
Lonicera Bella Rosea	3.00	27.50
Poplar, Bolleana	3.00	....
Poplar, Italica and Simoni	3.00	....
Salix Niobe	4.00	....

Ask for general list.
THE COTTAGE GARDENS, LANSING, MICH.

PLANTING STOCK.	Per 100
Ribes Alpinum (alpine currant)	
18 to 24 ins., heavy	$25.00
24 to 30 ins., heavy	30.00
Viburnum Prunifolium, 2 to 3 ft.	30.00
Viburnum Americanum, 3 to 4 ft.	35.00
Viburnum Opulus (snowball), 3 to 4 ft.	30.00
Prunus Tomentosa (Nanking cherry), 3 to 4 ft.	20.00
4 to 5 ft.	30.00
Amur River Privet (well br.), 18 to 24 ins.	6.00
24 to 36 ins.	8.00
Rosa Setigera, 2-yr., 24 to 30 ins.	12.00
2-yr., 30 to 36 ins.	18.00
Simon Poplars (well branched), 6 to 8 ft.	35.00

ESCHRICH'S NURSERY,
8ta. F, Milwaukee, Wis.

LINING-OUT STOCK.
Arborvitae: Baker, Rosedale, Goldspire, Dwarf Golden, $7.00 per 100, $65.00 per 1000.
Arizona Cypress, $6.00 per 100, $50.00 per 1000.
Italian Cypress, $8.00 per 100, $75.00 per 1000.
Junipers: Pfitzer, Andorra, Kiyonoi, Irish, $8.00 per 100, $75.00 per 1000.
Nandina Domestica, $6.00 per 100, $50.00 per 1000.
Abelia and Euonymus Japonica, $5.00 per 100.
Pyracantha Lalandi and Yunnanensis; Waxleaf Ligustrum; Gold Variegated and Silver Variegated Euonymus, $6.00 per 100, $55.00 per 1000. Grown in 2-in. rose pots unless otherwise noted.
Nandina seedlings, from seed bed, $1.50 per 100, $8.00 per 1000.
Amur River South Privet, from seed bed, 6 to 12 ins., $5.00 per 1000; 12 to 18 ins., $7.50 per 1000.
We also have the above plants field-grown at reasonable prices. Write for price list.
WISE ADKISSON, GREENVILLE, TEX.

Choice liners from 2¼-in. pots	100	1000
Biota A. Nana (Berckmans'), 4 to 6 ins.	$9.00	$85.00
Biota Bakeri, 6 to 8 ins.	9.00	85.00
New dark green Am. Arb., 4 to 6 ins.	7.00	65.00
Woodward Globe, 5 to 7 ins.	8.00	75.00
Pfitzer's Juniper, 5 to 7 ins.	9.00	85.00
Excelsa Stricta Juniper, 5 to 7 ins.	9.00	85.00
Blue Waukegan Juniper, 6 to 8 ins.	8.00	75.00
Sabina Juniper, 5 to 7 ins.	8.00	75.00
Polish Juniper, 5 to 7 ins.	9.00	85.00
Andorra Juniper, 5 to 7 ins.	9.00	85.00
Fastigiata (Nar. Irish), 5 to 7 ins.	10.00	95.00
Swediah Juniper, 5 to 7 ins.	9.00	85.00
Meyeri Juniper, 3 to 5 ins.	15.00	140.00
Kosteri, 6 to 8 ins.	9.00	85.00
Procumbens (Trail. Chinese), 5 to 7 ins.	9.00	85.00
Taxus Cuspidata, 3 to 5 ins.	8.50	80.00
Taxus Capitata, 3 to 5 ins.	8.50	80.00
Taxus Brevifolia, 3 to 5 ins.	8.00	75.00

Buckeye Floral Sales Co., Springfield, O.

EVERGREENS AND SHADE TREES.	Per 10
Fir, Concolor (Abies), 3 to 4 ft.	$22.00
Fir, Concolor (Abies), 4 to 5 ft.	30.00
Elm, American, 8 to 10 ft.	6.00
Elm, American, 10 to 12 ft.	8.00
Elm, American, 3 to 4-in. cal.	20.00
Elm, Chinese, 10 to 12 ft.	9.00
Elm, Chinese, 2 to 3-in. cal.	15.00
Elm, Chinese, 3 to 4-in. cal.	22.00
Ash, American Green, 6 to 8 ft.	4.00
Ash, American Green, 8 to 10 ft.	6.00
Ash, American Green, 10 to 12 ft.	9.00
Ash, American Green, 2 to 3-in. cal.	12.00
Hackberry (Celtis), 6 to 8 ft.	6.00
Hackberry (Celtis), 8 to 10 ft.	8.50
Hackberry (Celtis), 1¼ to 2-in. cal.	12.00
Hackberry (Celtis), 2 to 3-in. cal.	20.00
Walnut, Black, 8 to 10 ft.	8.00
Walnut, Black, 10 to 12 ft.	12.00

Packed free for cash.
MYERS NURSERY, ARCADIA, WIS.

AZALEA HEXE AND HINODEGIRI.
2-in. pot plants, potted last summer, $8.00 per 100, $75.00 per 1000. Catalogue of other stock.
TINGLE NURSERY CO.,
Pittsville, Md.

LINING-OUT EVERGREENS.	Per 100
Colorado Blue Spruce, 6-yr., T., From blue seed, 4 to 8 ins.	$ 7.00
From blue seed, 8 to 11 ins.	9.00
White Spruce, 4-yr., T., 4 to 8 ins.	5.00
Norway Spruce, 4-yr., T., 4 to 8 ins.	3.50
4-yr., T., 8 to 12 ins.	5.00
Norway Spruce, 6-yr., TT., 6 to 12 ins.	10.00
6-yr., TT., 12 to 18 ins.	13.00
Black Hill Spruce, 6-yr., TT., 7 to 12 ins.	14.00
Red Cedar, 4-yr., TT., 6 to 12 ins.	8.00
4-yr., TT., 12 to 20 ins.	12.00
Austrian Pine, 4-yr., T., 5 to 7 ins.	7.00
Mugho Pine, 4-yr., T., 2 to 4 ins.	7.00
4-yr., T., 4 to 6 ins.	10.00
EVERGREEN SEEDLINGS.	
Colorado Blue Spruce, From blue seed, 2-yr., 2 to 4 ins.	2.75
Black Hill Spruce, 3-yr., 2 to 4 ins.	2.50
Mugho Pine, 3-yr., 2 to 4 ins.	3.50

JOHN CARLSON,
Duneland Beach, Michigan City, Ind.

LINING-OUT STOCK.
Sturdy, outdoor-grown.
Berckmans' Arborvitae, 6 to 8 ins., 6c; 8 to 12 ins., 10c.
Baker's Arborvitae, 6 to 8 ins., 6c; 8 to 12 ins., 8c; 12 to 16 ins., 1-year, field, 12c.
JUNIPERS.
Ashford, 6 to 10 ins., 5c.
Conferta (Shore), 6 to 8 ins., 6c.
Mascula (Pyramidal), 8 to 12 ins., 10c.
Savin, 6 to 8 ins., 6c; 8 to 12 ins., 12c.
Pfitzer, 6 to 10 ins., 8c.
BROAD-LEAVED.
Boxwood, dwarf, 4 to 6 ins., 8c; 6 to 8 ins., 1-year, field, 10c.
Chinese Holly (Burford), 6 to 8 ins., 8c; 8 to 12 ins., 14c; 12 to 15 ins., out of 4½-in. pots, 18c.
Pyracantha Atalantoides (upright, red berries), 8 to 12 ins., 6c; 15 to 18 ins., out of 3-in. pots, 12c.
Pyracantha Lalandi (orange berries), 8 to 12 ins., 6c.
VERHALEN NURSERY CO.,
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A small nursery at Kalispell, Mont.; large territory. Owner has other interests. Call or write STOCKWELL'S NURSERY, KALISPELL, MONT.

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A man who is capable of taking entire charge of my nursery located in New Jersey. Must have extensive experience as a grower and propagator of hardy perennials, shrubs, trees, roses, etc., on a mass production basis. Must be sober and a hard worker and able to handle all help. An interesting opportunity awaits the right man. State age, nationality, education, experience, family, etc.

Robert Wayman, Bayside, L. I., N. Y.

FOR SALE

Northern View Nurseries, Pearisburg, Va., 4 acres of land with 2½ acres in young nursery stock. Nurseries have well established trade; located in the heart of a government defense area, also in prosperous community near Radford and Dublin, Va. Sale due to death of owner.
J. D. Yeatts, Administrator, Estate E. A. Yeatts, Martinsville, Va.

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Turn it into ready cash for more difficult days ahead.

List items and prices in the Classified ads and sell your stock quickly, easily and economically.

Five lines, $1.00; additional lines, 20c.

FUMIGATING OLD SOIL.

There is a growing trend among nurserymen and florists to sterilize their old bench soil instead of changing it annually for new soil. This practice is of particular interest to growers this year in view of the acute labor shortage. Extensive experimental and commercial applications have established the fact that old soil in which plants have been grown for one or more years can readily be renovated by treatment with Larvacide (chlorpicrin). By killing off the harmful organisms in the soil, the Larvacide treatment renders the old soil just as productive as the new soil and often even more so.

It is usually much cheaper to fumigate the old soil than to change it for new soil. For example, W. E. Gunesch, deputy state horticulturist of Colorado, points out in his annual report for 1941 that the total cost of changing old bench soil for new soil in the Denver area is 2.7 cents per square foot, as compared with a total cost, including labor, of 1.3 cents per square foot for fumigating the old soil with Larvacide. Similar cost comparisons have been made in many other sections.

Treatment of the old soil benches with Larvacide also helps to disinfect the bench boards, which often serve as a source of contamination when the soil is changed in the benches. There is often no certainty that new soil is free of disease-producing organisms, as is the case when old soil is properly fumigated in the benches with Larvacide.

Because many growers tend to overfertilize during the growing season, an accumulation of fertilizer may occur in the old soil to the point where injury to young plants may result. To counteract this possibility, the old soil should be tested for soluble salts at least three weeks prior to the Larvacide treatment. If the soil test reveals an injurious content of soluble fertilizer, this condition can be easily corrected, particularly in raised benches, by leaching with heavy applications of water. The leaching must be accomplished far enough ahead of the Larvacide treatment so that the soil will have a chance to dry out to the proper moisture content. It is also helpful, especially in ground beds of heavy soil, to incorporate such materials as rotted manure, peat, leaf mold or even cinders in the old soil to improve drainage and soil aeration and to facilitate the leaching process. A soil test may also show the necessity of correcting the pH of the old soil.

In the case of growers not equipped to test their own soil, Innis, Speiden & Co., 117 Liberty street, New York city, manufacturers of Larvacide, maintain a free soil-testing service. They invite users of Larvacide to take advantage of this service and to write for instructions on taking and forwarding soil samples. A prompt report on the results of the soil test with recommendations will be furnished.

RED CROSS BENEFITS.

Because two spectators at the recent Chicago flower show disagreed on whether the pond in a garden setting exhibited by the F. D. Clavey Ravinia Nurseries, Deerfield, Ill., was a mirror or water, the American Red Cross is $376.07 richer. The garden was pictured in the April 1 issue.

In the first minutes of the show Roy F. Clavey heard two men arguing the point. They agreed to wager 25 cents on the matter. One of them

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♦ Insects and worms — destroyed vegetation — reduced leaf area — stunted growth—these are some of the problems of the shade tree grower. Get our illustrated booklet that describes the use of "Black Leaf 40" in eliminating certain insects on shade trees. Lists insects — gives dosage.
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Associate Professor of Plant Pathology at Rutgers University

Foreword by L. H. Bailey

"Not since Solotaroff's **Shade Trees in Towns and Cities,** published in 1911, have we had a comprehensive book on the planting and care of shade trees. Shade tree and park men have long felt the need for an up-to-date treatise on the subject, and Dr. Pirone has very adequately filled this void in present-day shade tree literature. The science of shade tree preservation is now recognized by most leading Universities and Dr. Pirone has furnished the logical textbook for their use," continues PHILIP E. ALDEN, Editor, **The Shade Tree.**

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2. THE SOIL AND ITS RELATION TO TREES
3. TRANSPLANTING
4. FERTILIZERS AND THEIR USE
5. PRUNING TREES AND TREATING WOUNDS
6. CAVITY TREATMENTS
7. BRACING AND CABLING
8. TREES SUITABLE FOR STREETS AND ROADSIDES
9. DIAGNOSING TREE TROUBLES
10. NON-PARASITIC INJURIES
11. INSECT CONTROL
12. SPRAYING EQUIPMENT AND PRACTICES
13. TREE DISEASES AND THEIR CONTROL
14. GENERAL PARASITIC DISEASES
15. DISEASES AND INSECT PESTS OF STREET AND ROADSIDE TREES
16. DISEASES AND INSECT PESTS OF ORNAMENTAL DECIDUOUS TREES AND SOME SHRUBS
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put his hand into the pond, which was water, and said, "I win."

The other man took a quarter from his pocket, tossed it into the water and said, "There's your money; go get it." This gave Mr. Clavey an idea. He got a roll of pennies and began tossing them into the water. The idea appealed to other visitors and the exhibit became known as the "Red Cross Wishing Well." At the end of the show a workman shoveled the coins into a basket and the money was presented to the Red Cross.

Robert Bruce Harris, Chicago landscape architect, was designer of the garden.

ROSE HYBRIDIZING FILM.

An estimated 72,000,000 moviegoers in 10,000 American theaters during the year starting April 3, 1942, will see an elaborate and complete full-color popular science short on rose hybridizing. This production pictures the processes of rose growing at the Jackson & Perkins Co. nurseries, at Newark, N. Y., and Pleasanton, Cal. One of the series of Paramount popular science shorts produced in Magnacolor by Fairbanks and Carlyle, the rose sequence was filmed under the direction of Eugene S. Boerner.

Paramount's exploitation department is cooperating with the Jackson & Perkins Co. and theater owners throughout the country as well as with local nurserymen and garden clubs in promoting interest in this film. Local florists will make tie-ups with theaters for rose displays.

The hybridizing sequence was photographed at Newark during the annual rose festival staged there by the Jackson & Perkins Co. and features such recent rose introductions as Golden Rapture, Dickson's Red, Starlite, Pan America and Rome Glory. The processes through which these and other important roses were developed are shown in detail, and the rose fields where commercial stock is produced are pictured in a blaze of June color with blooming roses in many colors stretching to the horizon.

The Jackson & Perkins Co. will do its part toward creating a greater audience for this movie by attaching a promotional sticker to every one of the hundreds of thousands of pieces of mail which will leave Newark in the next few months. The company

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will also promote it to the hundred thousand or more visitors who annually come to the festival of roses held at Newark during the last weeks of June.

Organizations interested in seeing this picture are urged to communicate with their local theater manager to arrange for its exhibition.

FEEDING SHADE TREES.

Experiments dealing with the fertilization of shade trees in the nursery have been in progress at Ohio State University since the autumn of 1931. Annual reports have been given on the results since 1936. In the current compilation of some of the previous results, together with those recorded during 1941, Dr. L. C. Chadwick closes with the statement:

"The conclusions drawn in 1940 need not be modified following the results of 1941. They are:

"(1) The season of application of fertilizer does not appear, in itself, to be as important a factor as previously indicated. Fall, spring and summer applications have given nearly equal results over the 9-year period of this test. Fall has been slightly superior to other periods of applications.

"(2) Ample moisture following application of the fertilizer is important and necessary for favorable results.

"(3) A straw mulch, through its influence on soil moisture and temperature, may be as beneficial as a comparatively heavy application of fertilizer.

"(4) Complete fertilizers and Ammo-Phos have given greater stimulation than ammonium sulphate alone.

"(5) Applications of ammonium sulphate alone have given poor results.

"(6) Potash does not seem particularly necessary in this soil type, although in plots receiving some potash complete fertilizers are somewhat better."

CHARLES H. ADAMS, of the Adams Nursery, Inc., Springfield, Mass., is recuperating from a serious illness and operation at the Springfield hospital.

THE monthly meeting of the Greater St. Louis Landscape and Nurserymen's Association was held April 13 at the office of Charles W. Fullgraf, Clayton, Mo.

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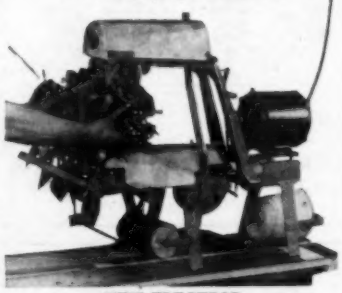

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1000..	2.90	24 lbs.
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1000..	3.10	33 lbs.
3x3x3		
500..	$1.95	
1000..	3.70	38 lbs.
3x3x4		
500..	$2.25	
1000..	4.30	44 lbs.
4x4x3		
500..	$2.10	
1000..	3.95	45 lbs.

	Wt. per 1000	
4x4x4		
500..	$2.65	
1000..	5.10	62 lbs.
3x3x6		
500..	$3.15	
1000..	6.15	66 lbs.
4x4x6		
500..	$3.65	
1000..	7.20	82 lbs.
6x6x6		
500..	$6.05	
1000..	11.90	98 lbs.
6x6x9		
500..	$9.60	
1000..	18.95	250 lbs.

With Bottoms

	Wt. per 1000	
4x4x4		
500..	$3.75	
1000..	7.30	72 lbs.
4x4x6		
500..	$5.40	
1000..	10.65	112 lbs.
6x6x4		
500..	$7.70	
1000..	15.25	160 lbs.
6x6x6		
500..	$9.75	
1000..	19.30	180 lbs.
6x6x9		
500..	$13.20	
1000..	26.15	350 lbs.

	Wt. per 1000	
6x7x2½		
500..	$6.00	
1000..	12.90	155 lbs.

Quantity discount of 5% is allowed on orders of 25,000 made up of various sizes. If interested in larger quantities write us.

FREE! **TWO SEED FLATS WITH EACH BUNDLE OF 1000 BANDS. Applies to smaller sizes including four-inch band.**

Picturing Buddleia plant in 6-inch band that has been potted up a year. Many other plants can be handled in this manner with these very practical bands. Can be moved as necessary if those with bottoms are used.

BALL BANDS ARE *Easy* TO USE!

PLACING THE BANDS

A putty knife is the easiest way to open these bands. Give the bands a light spray with water before opening. The long fibered spruce used in these bands prevents breaking at the folds. Disease-free, Ball Bands also do not contain materials injurious to plant growth.

FILLING THE BANDS

The same method may be used whether your bands are in flats or placed in entire bench. Larger sizes available with bottoms to prevent loss of soil in moving. This arrangement of bands assures more uniform moisture supply for your seedlings.

REMOVING THE BANDS

An upward stroke along the fold with a sharp knife quickly removes the bands. Some growers leave plants right in bands. The extra soil—2½ times that of the same size clay pot—makes it unnecessary to shift your plants.

SHIPPING INSTRUCTIONS

Be sure to specify clearly size of band and method of shipment! Freight much cheaper but slower.

Geo. J. Ball INC.
WEST CHICAGO
ILLINOIS